Chapter 5

Installing the Operating System with Express Setup

This section describes information on using Express Setup to install and configure the following operating systems to the server.

- Microsoft® Windows Server® 2003 R2 Standard Edition / Microsoft® Windows Server® 2003 R2 Enterprise Edition
- Microsoft® Windows Server® 2003 Standard Edition / Microsoft® Windows Server® 2003 Enterprise Edition

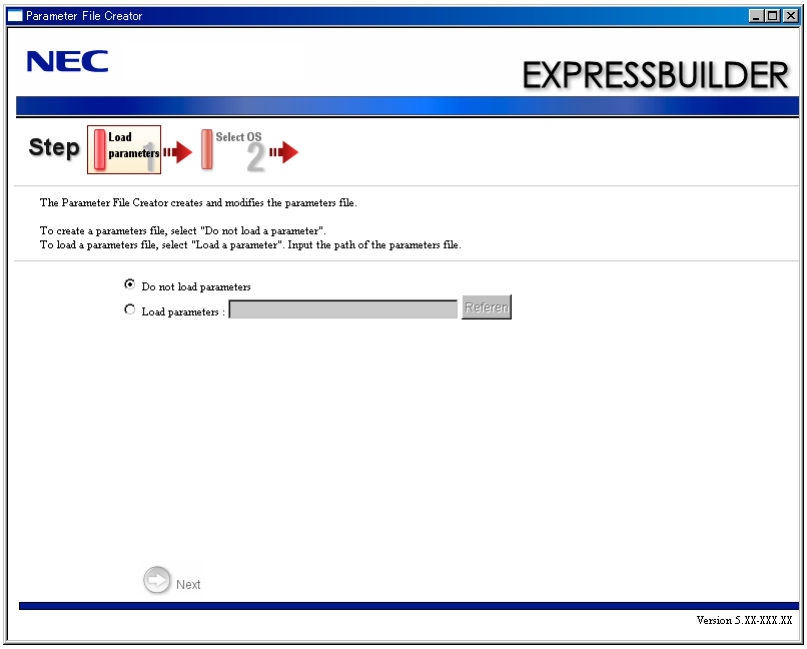
To use the server with the other operating systems described in this section, contact your service representative.

> **IMPORTANT:** Before installing the operating system, adjust the system date and time by using the BIOS setup utility "SETUP." See Chapter 4 for detail.

About Express Setup

"Express Setup" helps you to install the Windows Operating System. The setup automatically configures the RAID System and installs the Operating System and some management software.

IMPORTANT: Executing the Express Setup erases all data on the hard disk drive.



You can also use "Parameter File" at "Express Setup" in order to save or backup parameters for installation.
If you want to set up the server as before, execute the Express Setup with the parameter file you have saved before.

NOTES:

- If you want to create a parameters file, have a blank floppy disk (MS-DOS 1.44MB format) ready.
- When using a floppy disk, a USB floppy disk drive is required.
- If you want to use the drivers located on the "OEM-Disk for Mass Storage Device" that ships with optional boards, a parameters file is mandatory.
- You can create a parameters file in advance using "Parameter File Creator" included in NEC EXPRESSBUILDER.

Microsoft Windows Server 2003

This section explains how to install Microsoft® Windows® Server 2003 by using the Express Setup.

IMPORTANT: Be sure to prepare Windows Server 2003 CD-ROM that includes Service Pack 1.

NOTES:

- Express Setup does not support the installation of Windows Server x64 Editions. If you want to install it, see Appendix D.
- If you install Windows Server 2003 without using Express Setup, see Appendix E.

Notes on Windows Installation

This section explains the notes on the Windows installation.

Confirm these notes before starting the Express Setup.

About the Windows family

This computer supports the following Windows editions:

- Microsoft® Windows® Server 2003 Standard Edition / Microsoft® Windows® Server 2003 Enterprise Edition (hereinafter, referred to as "Windows Server 2003")
- Microsoft® Windows® Server 2003 R2 Standard Edition / Microsoft® Windows® Server 2003 R2 Enterprise Edition (hereinafter, referred to as "Windows Server 2003")

NOTE: Express Setup does not support the installation of Windows Server 2003 x64 Editions. If you want to install it, see Appendix D.

On installing other OS, contact sales dealer or the maintenance service representative.

BIOS Settings

Confirm the BIOS settings described in Chapter 4 before installing Windows Server 2003.

Service Pack Which EXPRESSBUILDER Supports

The EXPRESSBUILDER DVD attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2003 R2 x64 Edition
  - OS installation media (with Service Pack 2)
  - OS installation media (No Service Pack) + Service Pack 2
  - OS installation media (No Service Pack)
- Windows Server 2003 R2
  - OS installation media (with Service Pack 2)
  - OS installation media (No Service Pack) + Service Pack 2
  - OS installation media (No Service Pack)
- Windows Server 2003
  - OS installation media (with Service Pack 1)
  - OS installation media (with Service Pack 1) + Service Pack 2

Supported Mass Storage Controllers

The NEC EXPRESSBUILDER DVD attached to your system supports the following mass storage controllers for installation.

> **NOTE:** If you want to install the other boards by using a driver floppy disk ("OEM-FD for Mass storage device"), except ones listed below, see "Installing with the OEM-FD for Mass storage device" and "Installing Optional Mass Storage Driver" of "Parameter File Creator" in Chapter 6.

- Controllers supporting installation of OS with Express Setup
  - N8103-116 RAID controller (128 MB, RAID0/1)
  - N8103-117 RAID controller (128 MB, RAID0/1/5/6)
  - LSI Embedded MegaRAID (embedded on the mother board)
- Other controllers
  - N8103-75 SCSI Controller*
  - N8103-95 SCSI Controller*
  - N8103-104 SAS Controller*
  - N8103-107 SCSI Controller*

  * Option.

> **NOTES:**
>
> - The driver of option card mentioned above is stored in the EXPRESSBUILDER DVD.
> - If you use the board not mentioned above, the ExpressSetup will fail. Refer to the instructions attached to the board.

About the Hardware Components

When you install the Windows Server 2003, Express Setup requires several preparations if this computer uses the following hardware components.

Installing on the Mirrored Volume

If you want to install the Windows Server 2003 on the volume that is mirrored using "Disk Management", invalidate the mirroring and set back to the basic disk before the installation, and validate the mirroring again after the installation.

You can create, invalidate or delete the mirror volume by using "Disk Management" in "Computer Management".

Mounting MO Device

Do not mount an MO device on this computer during the Windows installation.

About Removable Media

Do not set removable media, such as DAT, into the device mounted on this computer during the Windows installation.

Connecting Hard Disk Drive

Do not connect the other hard disk drives except the drive that you want to create the Windows system drive.

If you create multiple logical drives in your system, see "Re-installing the Operating system when multiple logical drive exist" (Appendix E).

Re-installing to the hard disk drive which has been upgraded to Dynamic Disk

You cannot re-install Windows Server 2003 with the current partition of the hard disk drive upgraded to Dynamic Disk kept remained.

If you want to keep the current partition remained, see Appendix E to re-install the system.

About the System Partition Size

The system partition size can be calculated from the following formula.

Size necessary to install the system + Paging File Size + Dump File Size + Application Size
Size necessary to install the system = 3500MB (Windows Server 2003 R2)
= 3500MB (Windows Server 2003 with Service Pack1)
= 3500MB (Windows Server 2003 R2 with Service Pack2)
= 5300MB (Windows Server 2003 R2 + Service Pack 2 CD-ROM)
= 5300MB (Windows Server 2003 with Service 1 + Service Pack 2 CD-ROM)
Paging File Size (Recommended) = Mounted Memory Size * 1.5
Dump File Size = Mounted Memory Size + 12MB
Application Size = Required Size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- The maximum paging file size which can be set on one partition is 4095MB. If the above paging file size exceeds 4095MB, specify 4095MB for the paging file size.
- The maximum dump file size for the system with more than 2GB memory mounted is '2048MB + 12MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

For example, if the mounted memory size is 512MB, the partition size will be calculated by the above formula as follows:

3500MB + (512MB * 1.5) + (512MB + 12MB) + Application Size
= 4792MB + Application Size

Dividing into the partition of the recommended size into multiple disks as written below will solve problem that it cannot be reserved in one disk.

1. Set the "Size required for installation + Paging file size".
2. See Chapter 5 and set that debugging information (equivalent to the dump file size) is to be written to a separate disk.

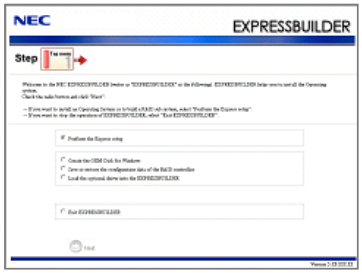
   (If the disk does not have enough free space to enable the dump file size to be written, then after installing the system using the "Size required for installation + Paging file size", install an additional new disk.)

Installing the Service Pack

When installing Windows Server 2003 R2, it is not necessary to install the Service Pack 1.

FLOW OF SETUP

This section visually describes the flow of the setup operated by Express Setup.



Loading parameters (Step 2)

Skip

Next

Select the operating system (Step 3)

Next

RAID configuration (Step 4)

Next

Windows Confirm Setting / Input
(Steps 5 to 10)

Next

Save parameters (Step 11)

Next

Start Express Setup (Step 12)

Perform

RAID Configuration

Create the OS partition / format

Copying Windows driver
↓
Copying Selected Application

Remove the Floppy Disk and CD/DVD-ROM from the Drive

Insert Windows CD-ROM

Agree Software License Agreement

Insert Service Pack CD-ROM (When you apply the Service Pack)

Install OS Automatically
↓
Log on Automatically

The installation is completed.

: Process that needs to input or select

: Process that proceeds automatically

INSTALLING THE WINDOWS SERVER 2003

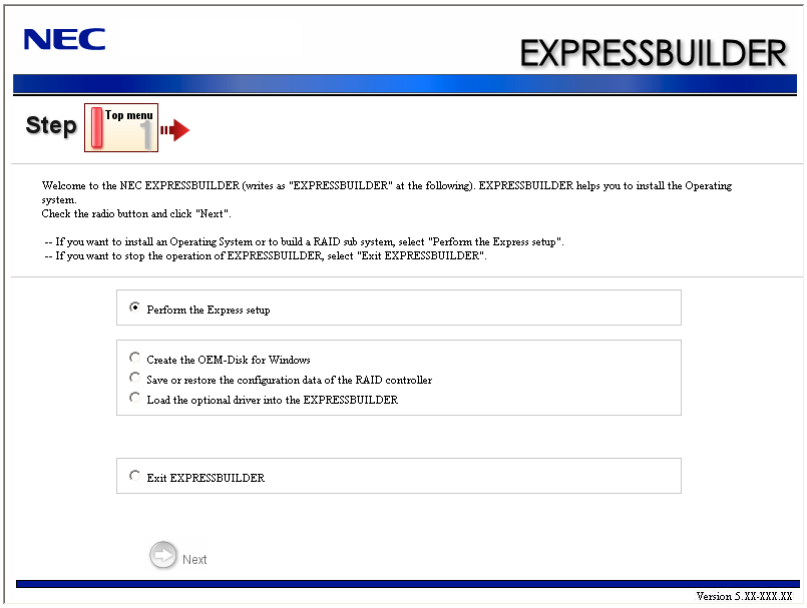
Express Setup proceeds the setup by selecting or inputting several parameters on the wizard. You can also save the parameters to a floppy disk as a parameters file.

1. Turn the power of peripheral device on, and then turn on the server.
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
3. Press the RESET switch or press **Ctrl**, **Alt**, and **Delete** to reboot from the NEC EXPRESSBUILDER. (You may also turn off and then on again to reboot the server.)

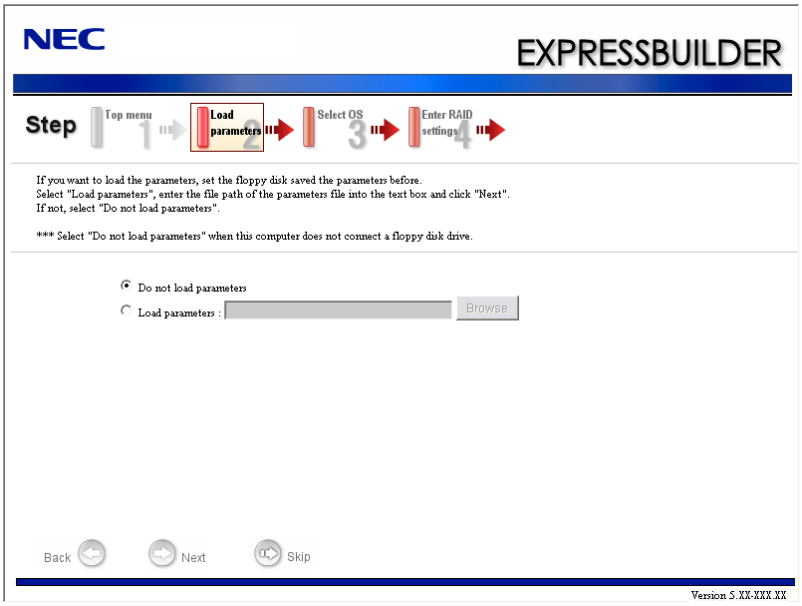
   The system will boot from the DVD-ROM and NEC EXPRESSBUILDER starts.

   Select "OS installation *** default ***" from the boot selection menu. (If you do not hit any key, "OS installation" is selected automatically.)

   The Top menu will appear.
4. Select [Perform the Express setup] from the Top Menu, click [Next].



5. [Load parameters] steps are displayed.



[Do not load parameters]

(1) Select [Do not load parameters].

(2) Click [Next].

NOTE: If a floppy disk drive is not connected, select this item.

[Load parameters]

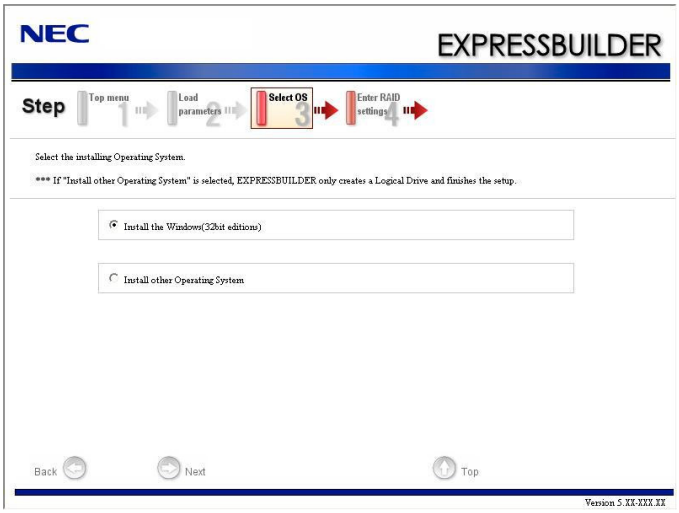
(1) Insert the floppy disk containing the parameters file.

(2) Select [Load parameters], enter the file path of the parameters file into the text box.

(3) Click [Next].

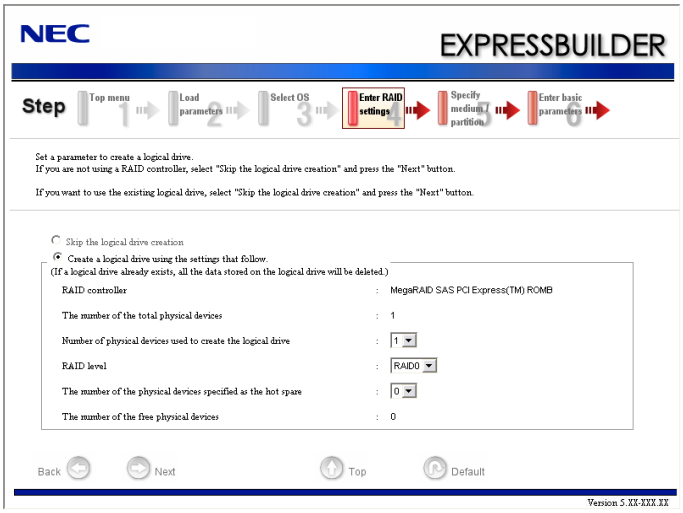
6. Select the installing Operating System.

Select [Install the Windows (32bit editions)] from the menu, click [Next].



7. Enter the setting of a logical drive.

[Enter RAID settings] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

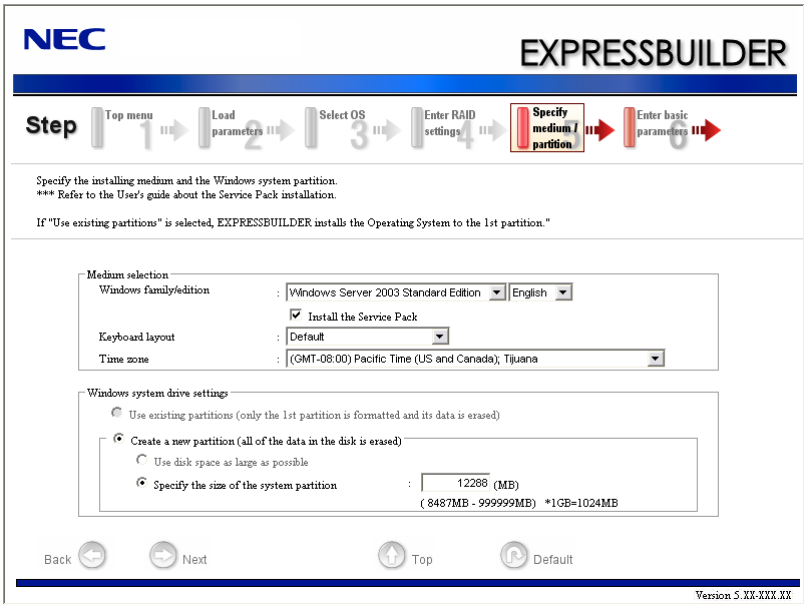


NOTES:

- You can use only the physical devices that have same model number to configure logical drive.
- If the process is not finished normally, the driver may not be stored in the EXPRESSBUILDER. Refer to "Optional Board Supported by NEC EXPRESSBUILDER" described earlier in this chapter.

8. Specify the installing medium and the Windows system partition.

[Specify medium / Partition] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



IMPORTANT:

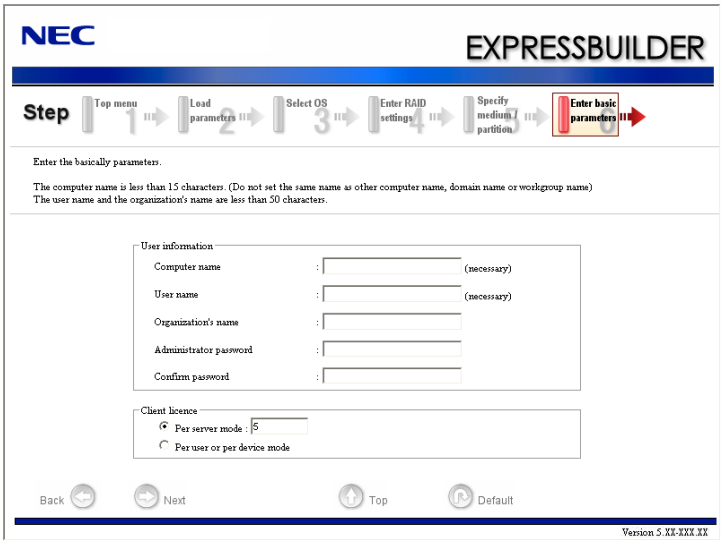
- About partition size
  - Specify the partition size larger than required minimum size for OS installation.
  - Do not specify larger partition size than the capacity of connected hard disk drive.
  - You can not specify the partition size larger than 2,097,152MB (2TB) at RAID system.
- If you select "Create a new partition" at "Windows system drive settings", the contents of the hard disk will be all deleted.
- If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition (1st partition is deleted). The data in the other partition is kept if the system has two or more partitions. (See the figure below.)

First Partition Deleted	Second Partition Retained	Third Partition Retained

- You can not re-install the system with the existing partition that is upgraded to Dynamic Disk remained. Do not select "Use existing partitions" at "Windows system drive settings".

9. Enter the user information and client license mode.

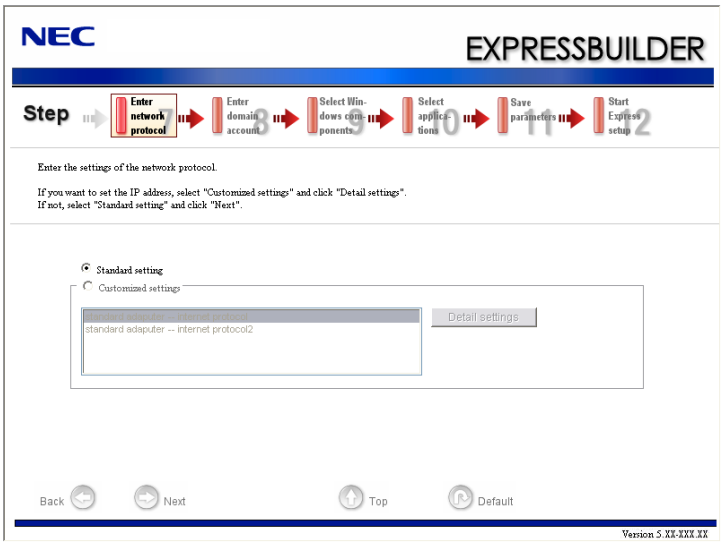
[Enter basic parameters] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



NOTE: Even if you do not input value into "Administrator password", "Confirm password", "??????" is displayed.

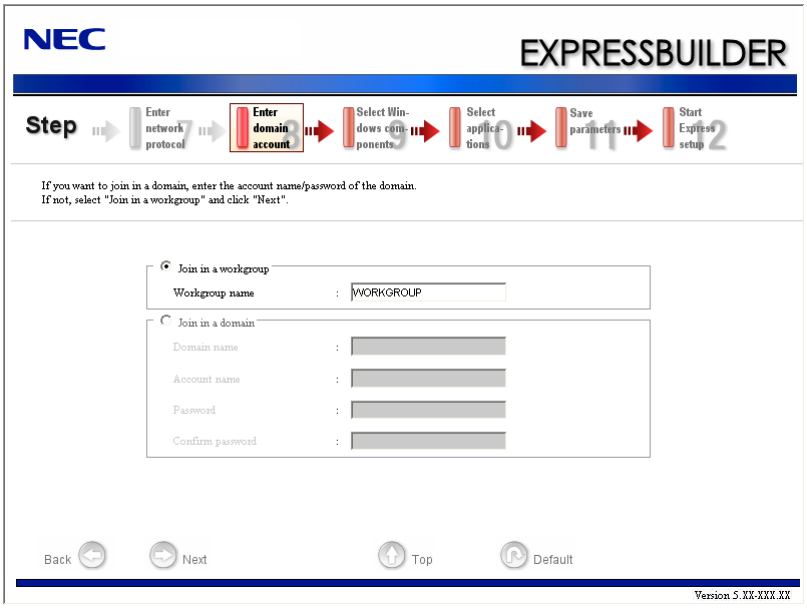
10. Enter the setting of the network protocol.

[Enter Network Protocol] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



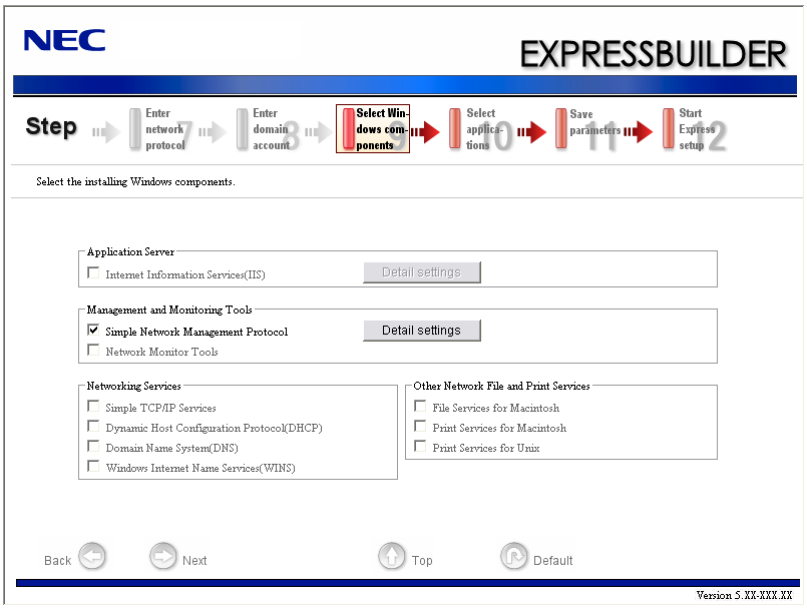
11. Enter the domain or workgroup name to be used.

[Enter domain account] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



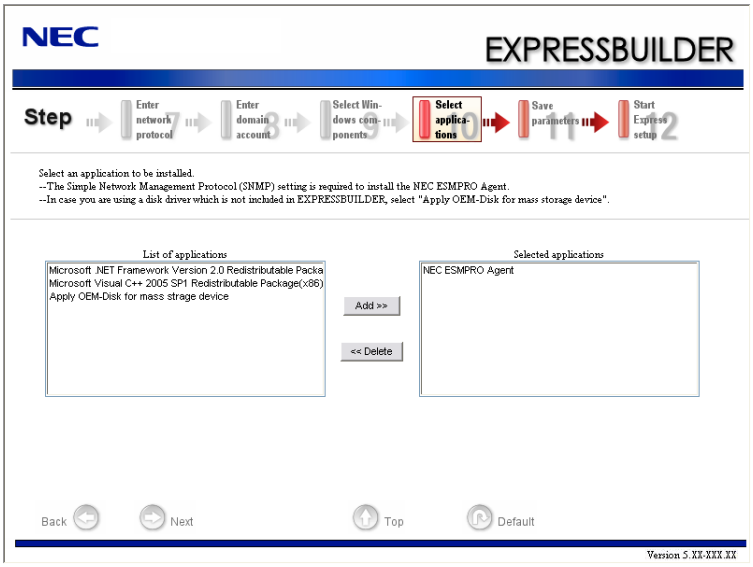
12. Select the installing components.

[Select Windows components] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



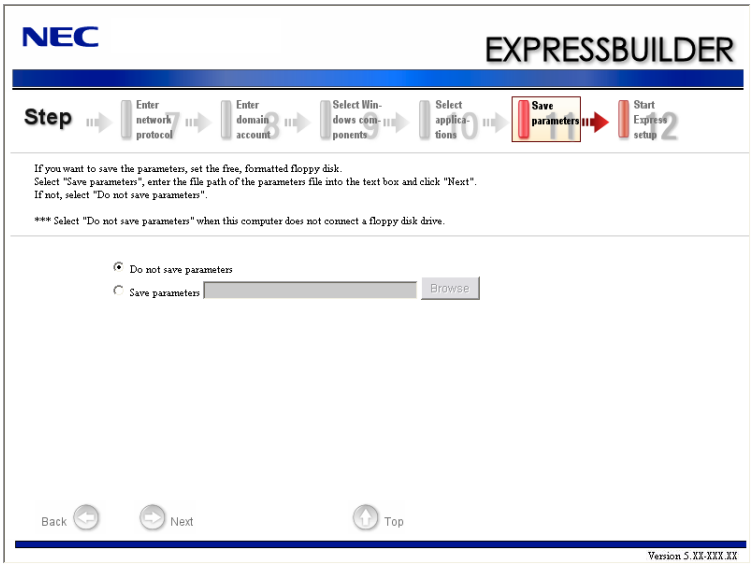
13. Select the installing applications.

[Select applications] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



14. Save the parameters.

[Save parameters] steps are displayed.

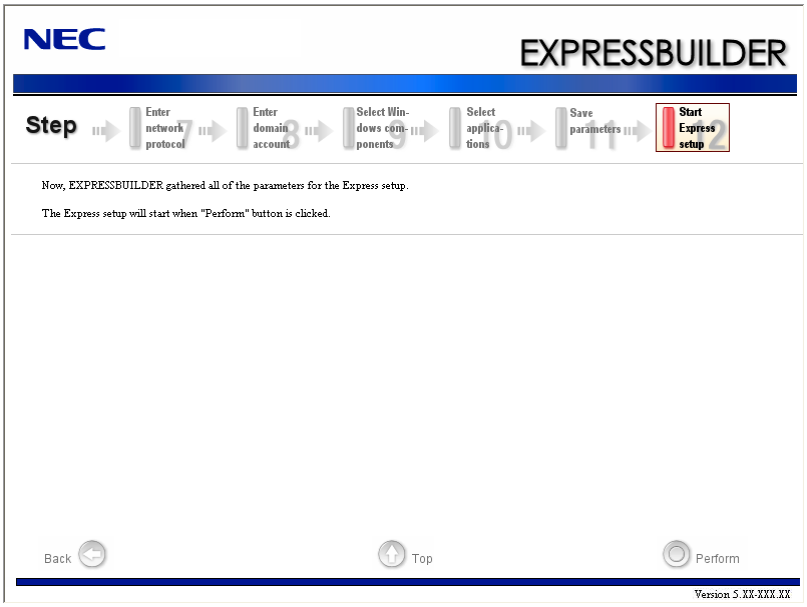


If you want to save the parameters , set the free formatted floppy disk.

Select [Save parameters], enter the file path of the parameters files into the text box and click [Next].

If not, select [Do not save parameters].

15. The Express Setup will start when you click [Perform] in [Start Express setup] step.



16. Copy optional Mass Storage Driver module.

If you install optional Mass Storage Driver, the message will be shown.

Insert CD-ROM or floppy disk attached to the Mass Storage Driver and proceed operation according to the message.

17. Remove NEC EXPRESSBUILDER DVD from the optical disk drive according to the message.

If you proceed the setup by using setup parameter file, remove the floppy disk from the floppy disk drive.

Insert Windows Server 2003 CD-ROM into the optical disk drive.

[Agree Software License Agreement] screen appears.

18. Read the contents carefully and click [Yes] if you do agree. If you do not agree, click [No].

IMPORTANT:

- If you do not agree to this agreement, the setup terminates and Windows Server 2003 will not be installed.
- If "NetWare Gateway (and Client) Service" is specified to install, the window to specify the details of "NetWare Gateway (and Client) Service" pops up on the first logon. Specify the appropriate value.

19. If you selected [Install the Service Pack] at [Specify Medium Partition] step, follow the procedure below.

1) Follow the message to take Windows Server 2003 CD-ROM out of the optical disk drive.

2) Follow the message to insert Windows Server 2003 Service Pack 2 into the optical disk drive.

IMPORTANT: If you install Windows CD-ROM that contains Service Pack 2 to your system, you do not have to apply Service pack 2 again.

Windows Server 2003 and selected applications will be installed automatically and rebooted several times.

After rebooting, it logs on to the system automatically.

20. If you install Microsoft Windows Server 2003 R2, insert Microsoft Windows Server 2003 R2 Standard Edition DISC 2 or Microsoft Windows Server 2003 R2 Enterprise Edition DISC 2 into the optical disk drive after the OS installation.

Hereinafter, proceed operations according to the message.

When the installation has finished, remove Microsoft Windows Server 2003 R2 Standard Edition DISC 2 or Microsoft Windows Server 2003 R2 Enterprise Edition DISC 2 from the optical disk drive, and restart the system.

Now the Setup using Express Setup has completed.

INSTALLING AND SETTING DEVICE DRIVERS

Follow these steps to install and configure the device drivers.

PROSet

NOTE: All of the operation that related to Intel® PROSet is must be executed by administrator privileges. Operation by [Remote Desktop Connection] is prohibited.
Without changing any parameter when opened the properties of adapter teaming, please click the [Cancel] button for close the dialog. Click [OK] button will cause temporary loss of network connectivity.

PROSet is a utility that confirms the function of network contained in network driver.

Utilizing PROSet enables the following items:

- Confirm detailed information of the adapter.
- Diagnose loop back test, packet transmission test and so on.
- Setup of teaming.

Configuring several network adapters as one team provides the server a tolerant environment on any trouble and enhances throughput between the switches.

PROSet is necessary to utilize these features.

Follow the procedure below to install PROSet.

1. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.

   If the autorun menu is displayed, close menu screen.

2. The [Windows Explorer] dialog starts.

   * The procedure in the case of the standard start menu

     Click Start menu and click [Windows Explorer].

   * The procedure in the case of the classic start menu

     Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].

3. Run "dxsetup.exe" in the following directory.

   \002\win\winnt\dotnet\dl3\proset\win32

   The [Intel(R) PROSet - InstallShield Wizard] dialog starts.

4. Click [Next].

5. Choose "I accept the terms in the license agreement" and click [Next].

6. Click [Next].

7. Choose "I accept the terms in the license agreement" and click [Next].
8. Click [Install].
9. When [InstallShield Wizard Completed] window is displayed, click [Finished].
10. Remove the NEC EXPRESSBUILDER DVD from the optical disk drive, restart the system.

Network Driver

Specify the details of network driver.

One standard network driver that is mounted will be installed automatically, but the link speed and Duplex mode need to be specified manually.

[When PROSet is not installed]

1. The [Local Area Connection Properties] dialog box appears.

   * The procedure in the case of the standard start menu

     1. Click Start menu, click [Control Panel], click [Network Connections], and click [Local Area Connection].

   * The procedure in the case of the classic start menu

     1. Click Start menu, click [Settings] and click [Network Connections].

        The [Network Connections] dialog box appears.

     2. Right-click [Local Area Connection] and click [Properties] from pop-up menu.

2. Click [Configure].

   The property dialog box for network adapter appears.

3. Click the [Advanced] and specify the [Link Speed & Duplex] value the same as the value specified for HUB.

4. Click [OK] on the property dialog box for network adapter.

[When PROSet is installed]

1. The [Intel(R) PROSet] dialog box appears.

   * The procedure in the case of the standard start menu

     Click Start menu, point to [Control Panel], [administrative tools], and click [Computer Management] and then double click the [(Network Adapter Name)] in the Network Adapter list.

   * The procedure in the case of the classic start menu

     1. Click Start menu, point to [Settings] and click [Control Panel].
     2. Click [administrative tools].
     3. Click [Computer Management] and double click the [(Network Adapter Name)] in the Network Adapter list.

2. Click the [Link] and specify the [Speed and Duplex] value the same as the value specified for HUB.

3. Click [Apply] and click [OK].

Also, add or delete any protocols and services if necessary.

You can operate the process on the property dialog box for local area network which can be appeared from [Network and Dial-up Connection].

NOTE: It is recommend to add [Network Monitor] at [Adding Services]. [Network Monitor] can monitor the frame (or the packet)that the computer installing [Network Monitor] sends or receives. This tool is valuable when analyzing network trouble. For information on how to install the tool, see the "Setting for Solving Problems" described later in this chapter.

Optional Network Board Driver

If you want to utilize optional Network Board (N8104-119/111/120/121/122/125/126/123A), the network driver will be installed automatically. Therefore, the driver attached to the Network board should not be used.

If you want to utilize optional Network Board (N8104-86/111), install the driver stored in NEC EXPRESSBUILDER DVD.

In case of utilizing (N8104-111)

"\002\win\winnt\dotnet\dl3\pro100\win32"

In case of utilizing (N8104-119/120/121/122/125/126)

"\002\win\winnt\dotnet\dl3\pro1000\win32"

If the procedure of installation is not clear, refer to the installation procedure described in the section "Installation of the Optional Network Board Driver".

In case of utilizing (N8104-123A)

Please refer to the installation manual provided with the board.

Installation of the Optional Network Board Driver

1. Start Device Manager.
2. Click [Network adapters] and double-click [(Network Adapter Name)].

   [(Network Adapter Name) Properties] appears.

   NOTE: [(Intel(R) PRO/1000...)] is the name of On-Board adapter. All other names show the Optional Network Board.

3. Click [Driver] tab and click [Update Driver...]. [Hardware Update Wizard] appears.
4. Select the [Install from a list or specific location (Advanced)] radio button and click [Next].
5. Select the [Search for the best driver in these locations] radio button and check off the [Search removable media (floppy, CD-ROM...)] check box.
6. Check the [Include this location in the search] check box and when using [(N8104-111)], specify
   [\002\win\winnt\dotnet\dl3\pro100\win32].

   Then click [Next].

   When using [(N8104-119/120/121/122/125/126)], specify
   [\002\win\winnt\dotnet\dl3\pro1000\win32].

   Then click [Next].
7. Click [Finish].

Adapter Fault Tolerance (AFT)/Adaptive Load Balancing (ALB)

Adapter Fault Tolerance (AFT) is a feature that creates a group containing more than one adapter and automatically converts the process of the working adapter to the other adapter in the group when any trouble occurred on that adapter.

Adaptive Load Balancing (ALB) is a feature that creates a group containing more than one adapter and enhance the through put by operating packet transmission from the server by all the adapters.

This feature includes AFT feature.

IMPORTANT:

- AFT/ALB setup must be operated after installing the drivers and restarting the system.
- All the adapters specified as a group of Adapter Teaming must exist on the same LAN. If they are connected to the separate switches, they will not work normally.
- The adapters specified as a group of Adaptive Load Balancing (ALB) can be connected to only Switching Hub.
- When exchange the mother board or option network card, make sure to remove the adapter team before exchanges and recreate the adapter team after exchange complete.

If you want to utilize AFT/ALB feature, follow the procedure below to setup.

1. The [Intel (R) PROSet] dialog box appears.

   * The procedure in the case of the standard start menu

     Click Start menu, point to [Control Panel], [administrative tools], and click [Computer Management] and then double click the [(Network Adapter Name)] in the Network Adapter list.

   * The procedure in the case of the classic start menu

     1. Click Start menu, point to [Settings] and click [Control Panel].
     2. Click [Administrative Tools].
     3. Click [Computer Management] and double click the [(Network Adapter Name)] in the Network Adapter list.

2. Select [Teaming] tab and then check on [Team with other adapters] and click [New Team...].

   The [New Team Wizard] dialog box appears. Click [Next]

   * Specify a name for the team if it necessary.

3. Select the adapters to include in team.
4. Select "Adapter Fault Tolerance" or "Adaptive Load Balancing" and click [Next].
5. Click [Finish].

6. If necessary to set the adapter priority setting, refer the following step.
   If not, go to step 7.
   1. Click [Settings] tab on [TEAM:xxx #yy Properties].
   2. Click [Modify Team].
   3. Point to the adapter [Intel(R)PRO/1000....]and click [Set Primary] or [Set Secondary].
   4. Click [OK].
   5. The setup will go back to [EAM:xxx #yy Properties] and the priority setting will display in list ().
   6. Click [OK]
7. The setup will go back to [Intel (R) PROSet for Wired Connections] dialog box, so click [OK].
8. Restart the system.

Graphics Accelerator Driver

If you utilize standard graphics accelerator drivers, update your system with NEC EXPRESSBUILDER DVD attached to your system.
Standard graphics accelerator drivers will be installed automatically.

Please follow the following procedure when you want to reinstall the driver individually.

1. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.

   If the autorun menu is displayed, close menu screen.
2. Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "setup.exe" in the following directory.

   \002\win\winnt\dotnet\video\setup.exe
4. Follow the message to continue the installation.

   If the dialog message "Digital Signature could not been found." appears, select [Yes] to continue.
5. Remove the NEC EXPRESSBUILDER DVD from the optical disk drive, restart the system.

SCSI Controller Driver (N8103-75/95/107)

If you utilize SCSI controller driver (N8103-75/95/107), update your system with NEC EXPRESSBUILDER DVD attached to your system.

The SCSI controller driver will be installed automatically.

Installing SAS Controller Driver (N8103-104)

If you utilize SAS controller driver (N8103-104), update your system with NEC EXPRESSBUILDER DVD attached to your system.

The SAS controller driver will be installed automatically

Available switch options for Windows Server 2003 Boot.ini file

Many different switches will be available if you edit Boot.ini file.

For the available switch options, refer to the following information:

- Microsoft Knowledge Base - Article ID: 833721

  "Available switch options for the Windows XP and the Windows Server 2003 Boot.ini files"

If your system has a memory capacity in excess of 4GB in its installing, adding /PAE switch in Boot.ini file will enable the system to be installed with over 4GB of memory.

However, the Microsoft operating system products which support /PAE switch option are limited.

Refer to the following article in Microsoft Knowledge Base to check the supported products.

- Microsoft Knowledge Base - Article ID: 291988

  "A description of the 4GB RAM tuning feature and the Physical Address Extension switch"

Below is the example on how to add /PAE switch to Boot.ini file.

1. Click [Start], point to [Settings], and then click [Control Panel].
2. In [Control Panel], double-click [System].
3. Click the [Advanced] tab, and then click [Settings] under [Setup and Recovery].
4. Under [System Setup], click [Edit] to open [Boot.ini].
5. Add "/PAE" to [Operating Systems] section in [Boot.ini] file, and then save it.

   <Example of Boot.ini file>

   ```
   [boot loader]
   timeout=30
   default=multi(0)disk(0)rdisk(0)partition(2)\WINDOWS
   [operating systems]
   multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003" /fastdetect
   multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003, PAE" /fastdetect
   /PAE
   C:\CMDCONS\BOOTSECT.DAT="Microsoft Windows Recovery Console" /cmdcons
   ```

   This is the end of editing Boot.ini file.

NOTE: If you choose one of the items in the "Default operating system" drop-down list box in [Setup and Recovery] group box, you can make your system start automatically from the switch you specified.

SETTING FOR SOLVING PROBLEMS

Setup the following issue in advance so that your computer can recover from any trouble precisely and as soon as possible when it should occur.

Memory Dump (Debug Information)

This section describes the procedures for collecting memory dump (debug information) in the server.

IMPORTANT: Cautions for the Memory Dump

- The staff of maintenance service representative is in charge of collecting memory dump. Customers need only to specify the memory dump.
- If any trouble occur after specifying the process below, the message to inform that the system is in short of virtual memory may appear, but continue to start the system. If you restart the system in such case, memory dump may not be stored correctly.

Follow the procedure below to specify.

1. Select [Control Panel] and click [System].

   The [System Properties] dialog box appears.

2. Select [Advanced] tab.
3. Click [Settings] on the [Startup and Recovery] group box.

IMPORTANT:

Windows Server 2003 x64 Editions

- To specify "Complete Memory Dump" to write the debug information is recommended.
  If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
- Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 1MB".
- In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory. The size of debugging information (memory dump) to be taken also changes due to adding memory. Verify the size of the empty space in the debugging information (memory dump) write destination drive.

Windows Server 2003

- To specify "Complete Memory Dump" to write the debug information is recommended.
  If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
- Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 12MB"(In case the memory capacity is more than 2GB, a free area of "2048+12MB" or more).
- In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory. The size of debugging information (memory dump) to be taken also changes due to adding memory. Verify the size of the empty space in the debugging information (memory dump) write destination drive.

4. Specify "Complete memory dump" and modify [Dump file:] in the [Write debugging information] group box.

   e.g. Write the debug information in D drive write the file name "MEMORY.DMP".

   D:\MEMORY.DMP

5. Click [Settings] on the [Performance] group box.

   The [Performance Options] window appears.

6. Click [Advanced] tab on the [Performance Options] window.

7. Click [Change] on the [Virtual memory] group box.

8. Modify [Initial Size] in the [Paging file size for selected drive] box to the value larger than the value of [Recommended] in the [Total paging file size for all drives], and click [Set].

   IMPORTANT:

   - The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
     Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
   - For more information on "Recommended" value, see "About the System Partition Size" described earlier.
   - In case the memory is expanded, re-specify the paging file to suit the new memory size.

9. Click [OK].

   The message to restart the system may appear according to the modified specification. In such case, follow the message to restart the system.

Windows Dr. Watson

Windows Dr. Watson is a debugger for application errors. If any application error is detected, Dr. Watson diagnoses the server and logs diagnostic information (log). Follow the procedure below and specify Dr. Watson to collect diagnostic information.

1. Click [Run] on Start menu.
2. Type "drwtsn32.exe" in the [Open] box, and click [OK].

   The [Dr. Watson for Windows] dialog box appears.
3. Specify the location to store the diagnostic information in the [Log File Path] box.

   The diagnostic information will be stored with the file name "DRWTSN32.LOG".

   NOTE: You can not specify network path. Specify the path on local computer.
4. Specify the location of crash dump file in the [Crash Dump] box.

   NOTE: "Crash Dump File" is a binary file that can be read with Windows Debugger.
5. Check the following check box on the [Option] box.

   ☐ Dump Symbol Table
   ☐ Dump All Thread Contexts
   ☐ Add To Existing Log File
   ☐ Create Crash Dump File

   For more information on each function above, refer to Online Help.
6. Click [OK].

Network Monitor

Utilizing Network Monitor helps you to investigate and manage with network trouble. To utilize Network Monitor, you need to restart the system after the installation has completed, so we recommend to install Network Monitor before any network trouble may occur.

1. Point to [Settings] from Start menu and click [Control Panel].

   The [Control Panel] dialog box appears.

2. Double-click [Add or Remove Programs].

   The [Add or Remove Programs] dialog box appears.

3. Click [Add/Remove Windows Component].

   The [Windows Components Wizard] dialog box appears.

4. Click [Management and Monitoring Tools] and then click [Details].

   The [Management and Monitoring Tools] dialog appears.

5. Click to select the [Network Monitor Tools] check box, and then click [OK].
6. The [Windows Components Wizard] dialog box appears again, so click [Next].
7. If the setup asks to install the disk, insert the OS CD-ROM into optical disk drive and click [OK].
8. Click [Finish] in the [Windows Component Wizard] dialog box.
9. Close the [Add or Remove Programs] dialog box.
10. Close the [Control Panel] dialog box.

To start Network Monitor, point to [Program] → [Administrative Tools] and click [Network Monitor]. For information on how to operate Network Monitor, refer to Online Help.

INSTALLING MAINTENANCE UTILITIES

Various maintenance utilities are contained in your NEC EXPRESSBUILDER DVD. See Chapter 6 for installing the utilities to your server or management workstations.

UPDATING THE SYSTEM – INSTALLING SERVICE PACK –

IMPORTANT: If you install Windows Server 2003 CD-ROM which contains Service Pack 2 to your system, you do not have to apply Service Pack 2 again.

"Updating the System" is executed by Express Setup automatically.

Execute "Updating the System" in following cases.

- Modified system configuration.
- Recovered the system using recovery process.

See "Updating the System - Applying Service Pack -" section in Appendix D for detail of update process.

MAKING BACKUP COPIES OF SYSTEM INFORMATION

The system information includes the current BIOS settings and any specific information for the server.

Save the information after completing the system setup.

Without the backup data, you will not be able to recover the information.

You can save the information by the following process.

1. Insert the "NEC EXPRESSBUILDER" DVD into the optical disk drive and reboot the system.
2. Select [Maintenance Tools (Normal mode)].
3. Select [English].
4. Select [Maintenance Utility].
5. Select [System Information Management].
6. Insert a floppy disk into the floppy disk drive.
7. Select [Save].

Installing with the OEM-FD for Mass Storage Device

This section explains how to setup with the OEM-FD. You usually do not have to do as follows. If your system has any Mass storage devices, you have to set as follows depending on your system. The detailed information is provided by the manual of the Mass storage device.

Installation of Mass storage device not to be supported by Express Setup

If you would like to install or re-install the OS when the system has new mass storage device not to be supported by NEC EXPRESSBUILDER, you have to set as follows.

1. Read the manual supplied with the mass storage device before setting the server.
2. If the mass storage device is RAID Controller, configure the RAID System before running the NEC EXPRESSBUILDER.
3. Boot the system from NEC EXPRESSBUILDER DVD.
4. Select [Load the optional driver into the EXPRESSBUILDER] from the Top menu, click [Next].

   Setting the driver disk for the mass storage controller. Press the "Perform" button.

   NOTE: By choosing this option, you can load the driver provided by CD-ROM or floppy disk to proceed with the Express Setup.

5. Perform Express Setup with the following settings.

   (a) When "Enter RAID settings" appears, check "Skip the logical drive creation".

   (b) Select "Apply OEM-Disk for Mass storage device".

6. Copy the driver for the mass storage device in the Express Setup.

   Insert the floppy disk attached the mass storage device into the floppy disk drive.

   Continue the Express Setup, referring to messages displayed on the display.

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Chapter 6

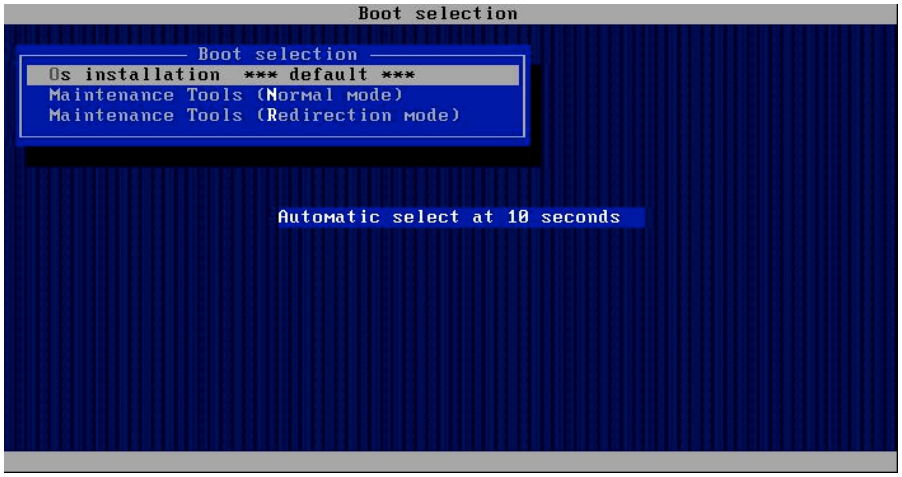
Installing and Using Utilities

This section describes how to use the NEC EXPRESSBUILDER DVD that comes with your server and to install the utilities stored on the NEC EXPRESSBUILDER.

NEC EXPRESSBUILDER

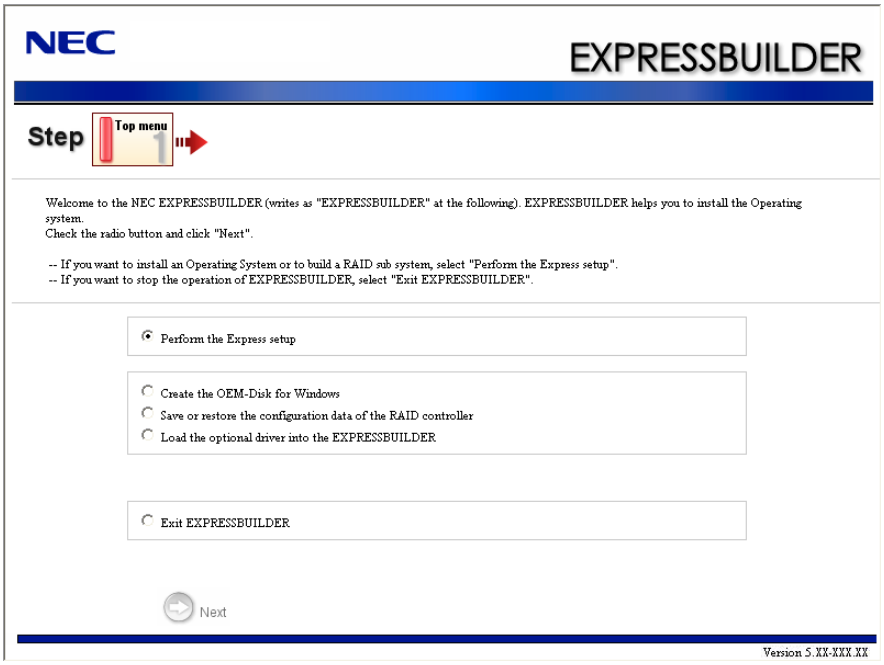
The NEC EXPRESSBUILDER (referred to as "EXPRESSBUILDER" hereinafter) helps you install the Operating system/the Management software or use the maintenance utilities.

When you insert the EXPRESSBUILDER disk into the DVD drive and reboot the system, the following menu appears.



■ OS installation

If you select this item, the Top menu appears.



IMPORTANT:

- This tool is Configuration Tool that built on Windows PE 2.0 technology.
  Pay attention to the automatic reboot that occurs after 72 hours from start.
- The configuration with Windows PE 2.0 supports Windows Server 2003 (32bit) and Windows Vista Business (32-bit (x86)), but the other operation is not supported.

You can use the Express Setup (see Chapter 5) or the following functions from this menu.

– Create the OEM-Disk
  You can create the Windows OEM-Disk to use at the Windows manual setup.

– Load the driver
  This function is not usually used. If you add the new device to the server, this function may use. (See Chapter 5.)

■ Maintenance Tools (Normal Mode)

If you select this item, the Tool menu appears.

You can use the below functions for maintenance.

– Maintenance Utility
  The Maintenance Utility is usually used by the service representative. (See Chapter 7.)

– BIOS/FW Updating
  You can update the system BIOS by using the floppy disk (prepare a 3.5" floppy disk).

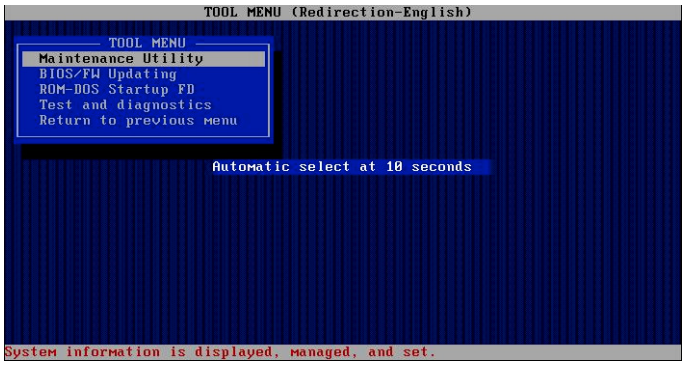
– ROM-DOS Startup FD
  The ROM-DOS Startup FD is used for starting the ROM-DOS system.

– Test and diagnostics
  This function allows you to diagnose this computer. (See Chapter 7.)

- Maintenance Tools (Redirection Mode)

  If you want to operate this computer via the BIOS redirection (the console-less function), select this item.

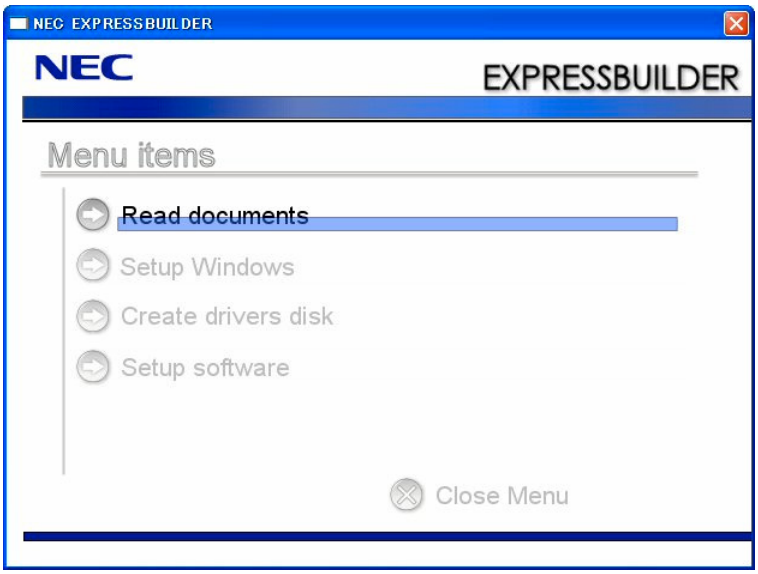
  NOTE: If you operate this computer via the Remote KVM function, select the "Maintenance Tools (Normal mode)".



  The menu's functions are the same as the "Maintenance Tools (Normal Mode)".

Autorun Menu

When the EXPRESSBUILDER disk is inserted into the DVD drive, Windows automatically launches the menu as shown below.



This menu is used to,

- Read the User's Guide or the other documents,
- Update the server system (Windows drivers), and
- Install the management software.

NOTES:

- This menu requires Microsoft Windows XP, Vista or Windows Server 2003 (or later).
- Some documents are provided in PDF format. Use the Adobe Reader to view or print these documents.

If the menu does not appear, select "My computer" by using the Explorer, and double-click the icon of the DVD drive that contains the EXPRESSBUILDER DVD.

Some menu items are grayed-out when the logon user does not have the authority of the administrator or the menu item is not available for your system.

To use the menu,

- Click on the menu items, or
- Click the right mouse button on the menu window.

PARAMETER FILE CREATOR

"Parameter File Creator" is a tool to create [Parameter file] that is used for configuring the server with the Express Setup (see Chapter 5 for details).

If you use the Parameter file created by the Express Setup and Parameter File Creator to operate the setup, you can setup from the installation of OS to several utilities automatically except for a few key input to confirm the specification. Also, you can install the system with the same specification as before when re-installing the system. We recommend you to create [Parameter file] to setup the servers from NEC EXPRESSBUILDER.

When using a floppy disk, a USB floppy disk drive is required.

IMPORTANT: You can not create [Parameter file] for Microsoft Windows Server 2003 x64 Editions.

NOTE: You can install Windows Server 2003 without [Parameter file]. Also, you can modify/newly create [Parameter file] during the setup with NEC EXPRESSBUILDER.

Parameter File

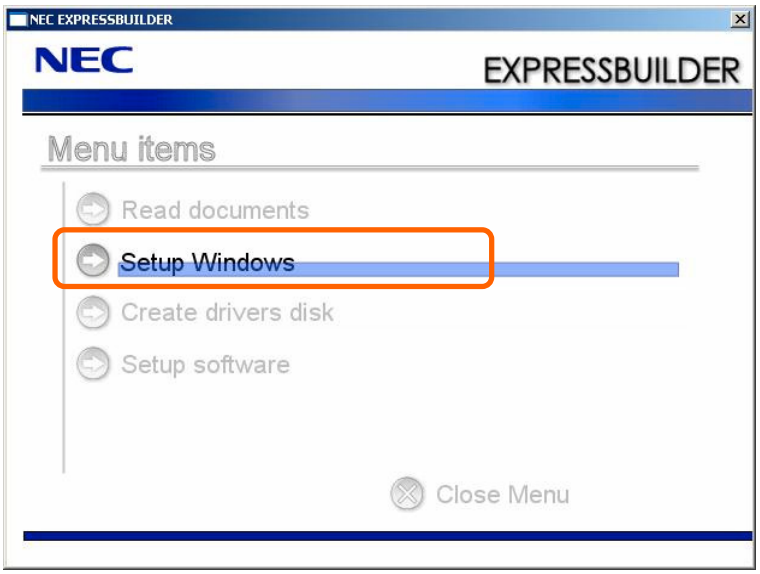
This section describes about specifying setup information that is necessary for OS installation and creating [Parameter file].

Follow the procedure below.

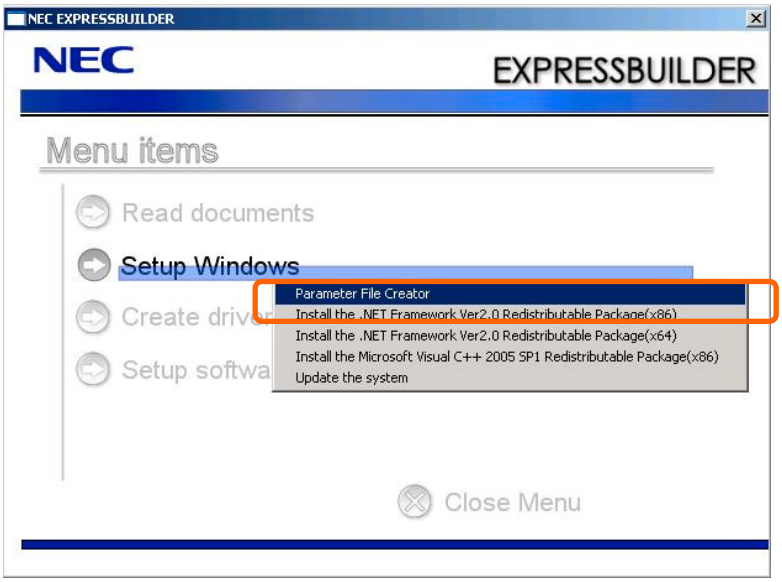
> **IMPORTANT:** Do not remove NEC EXPRESSBUILDER DVD from drive during a parameter file creation.

1. Start the OS.
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.

   The menu will appear.
3. Right-click on the screen or left-click [Setup Windows]. The menu will appear.



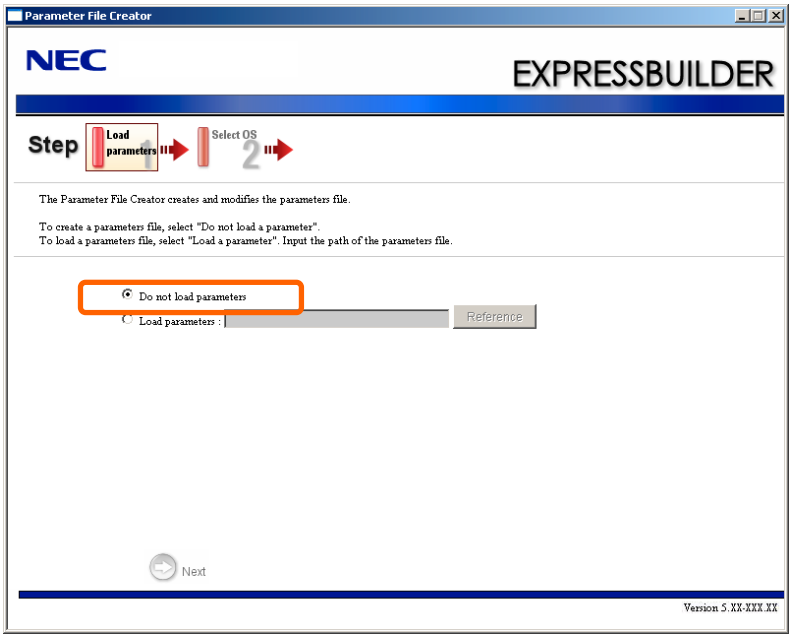
4. Click [Parameter File Creator].



Parameter File Creator will appear.

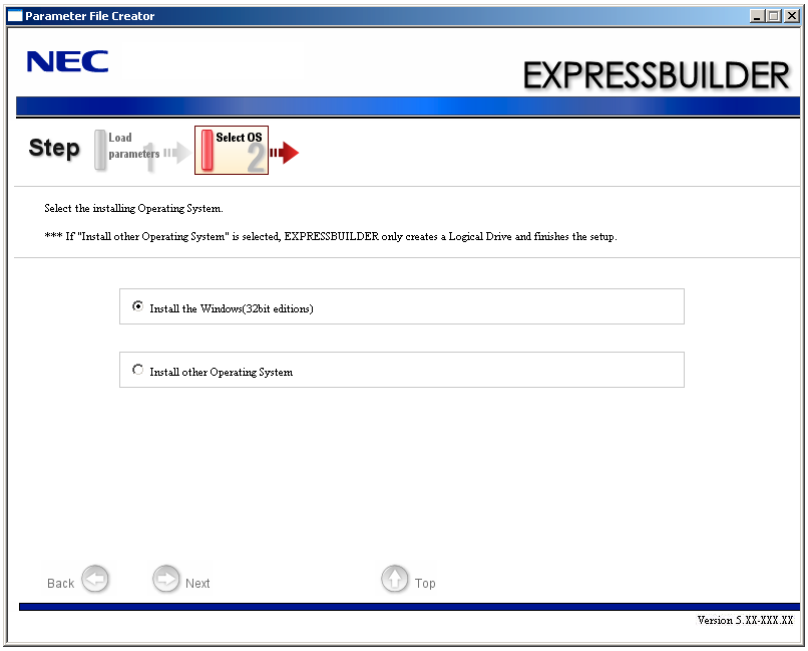
5. [Load Parameters] step is displayed.

Select [Do not load parameters] from the menu, click [Next].



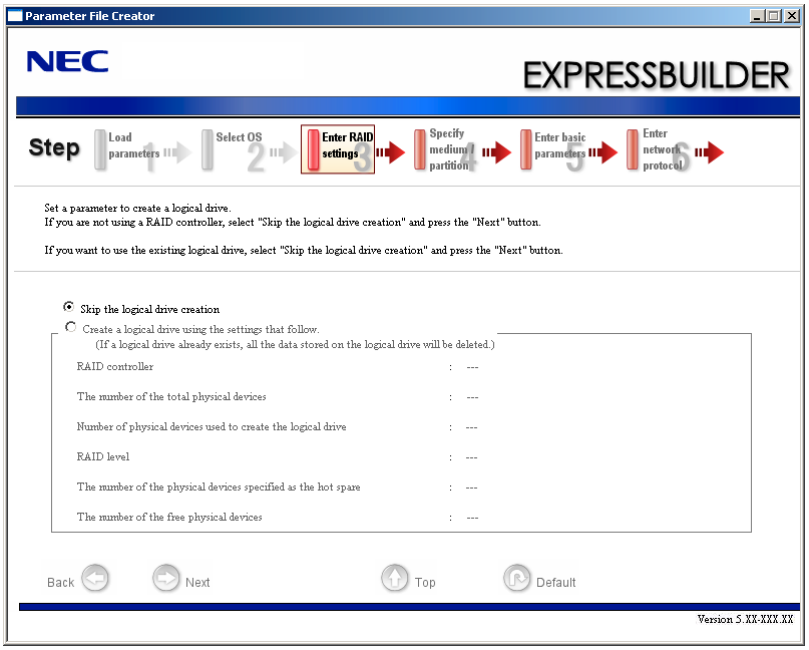
6. Select the installing Operating System.

Select [Install the Windows (32bit editions)] from the menu, click [Next].



7. Enter the setting of a logical drive.

[Enter RAID setting] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

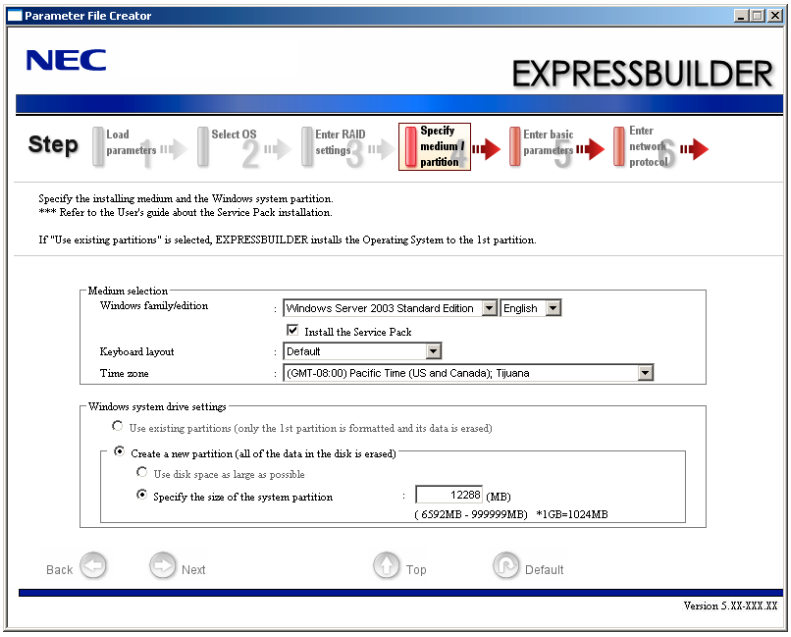


IMPORTANT: At "The number of the total physical devices", Parameter File Creator displays upper limit that the RAID controller can support.
The total of "The number of physical devices used to create the logical drive" and "The number of the physical devices specified as the hot spare" must not exceed "The number of the total physical devices" which connected to the target system.

NOTE: You can use only the physical devices that have same model number to configure logical drive.

8. Specify the installing medium and the Windows system partition.

[Specify medium / Partition] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



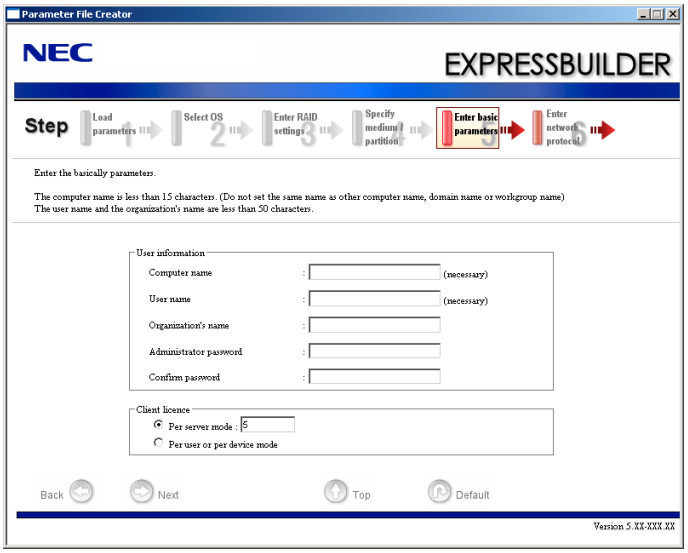
IMPORTANT:

- About partition size
  - Specify the partition size larger than required minimum size for OS installation.
  - Do not specify larger partition size than the capacity of connected hard disk drive.
  - You can not specify the partition size larger than 2,097,152MB (2TB) at RAID system.
- If you select "Create a new partition" at "Windows system drive settings", the contents of the hard disk will be all deleted.
- If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition (1st partition is deleted). The data in the other partition is kept if the system has two or more partitions. (See the figure below.)

First Partition Deleted	Second Partition Retained	Third Partition Retained

- You can not re-install the system with the existing partition that is upgraded to Dynamic Disk remained. Do not select "Use existing partitions" at "Windows system drive settings".

9. Enter the user information and client license mode. [Enter basic parameters] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

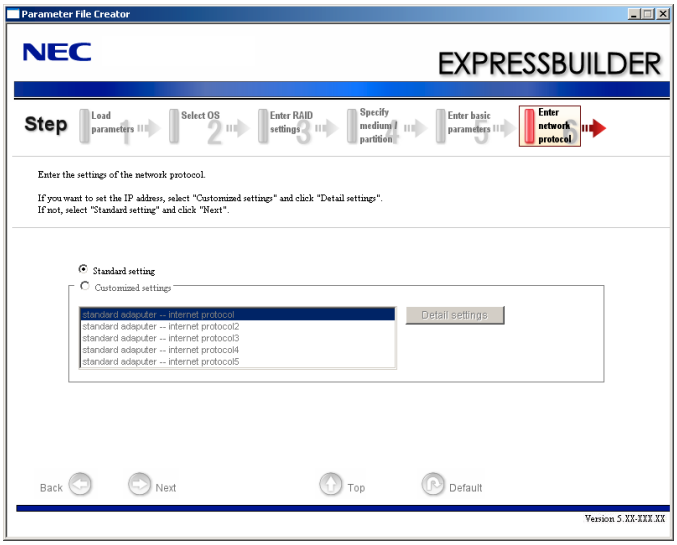


IMPORTANT: Computer name and User name are required parameters.

NOTE: Even if you do not input value into "Administrator password", "Confirm password", "●●●●●●" is displayed.

10. Enter the setting of the network protocol.

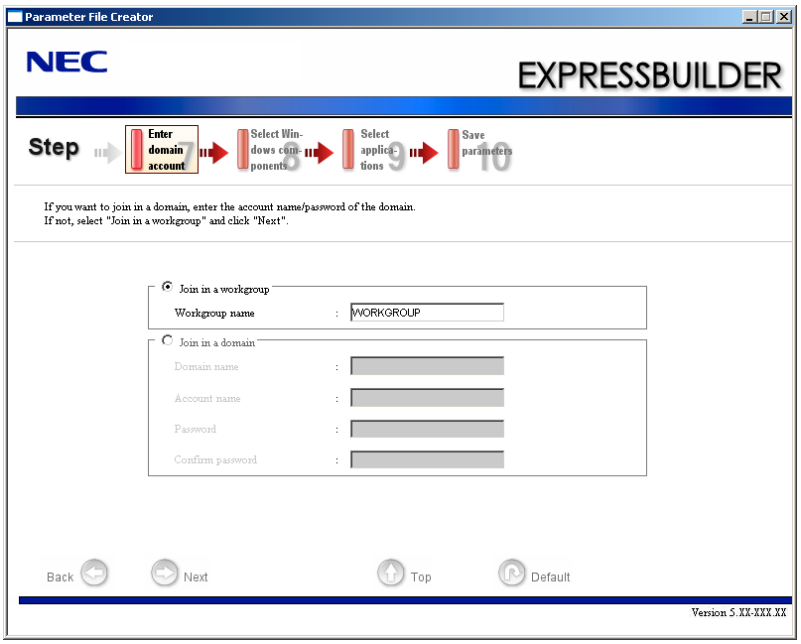
[Enter network protocol] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



NOTE: The order of entry in custom setting may differ from the numbering of LAN port.

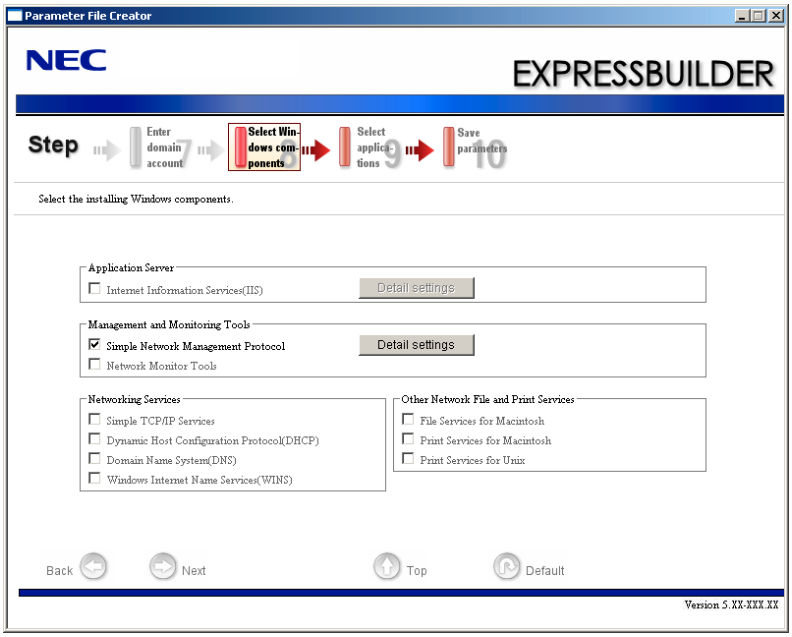
11. Enter the domain or workgroup name to be used.

[Enter domain account] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



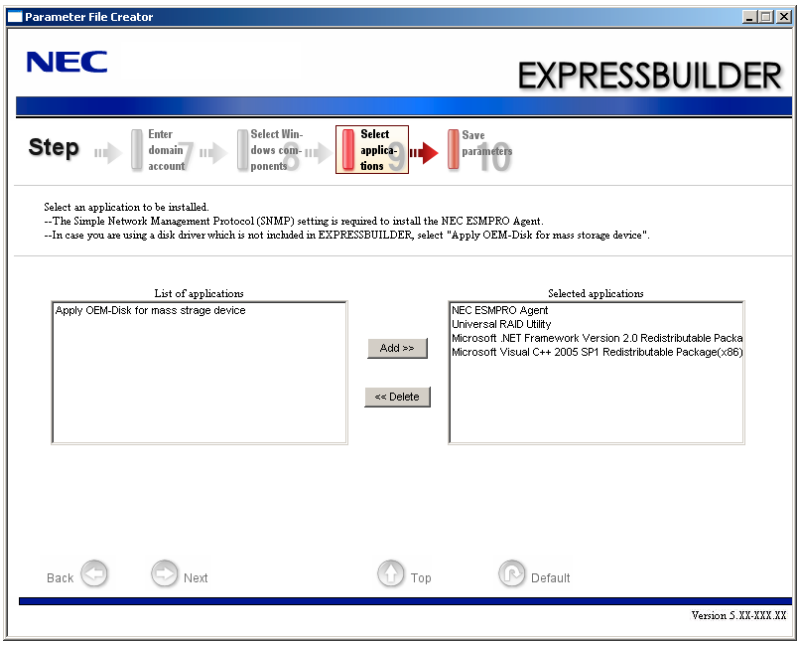
12. Select the installing components.

[Select Windows components] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next]



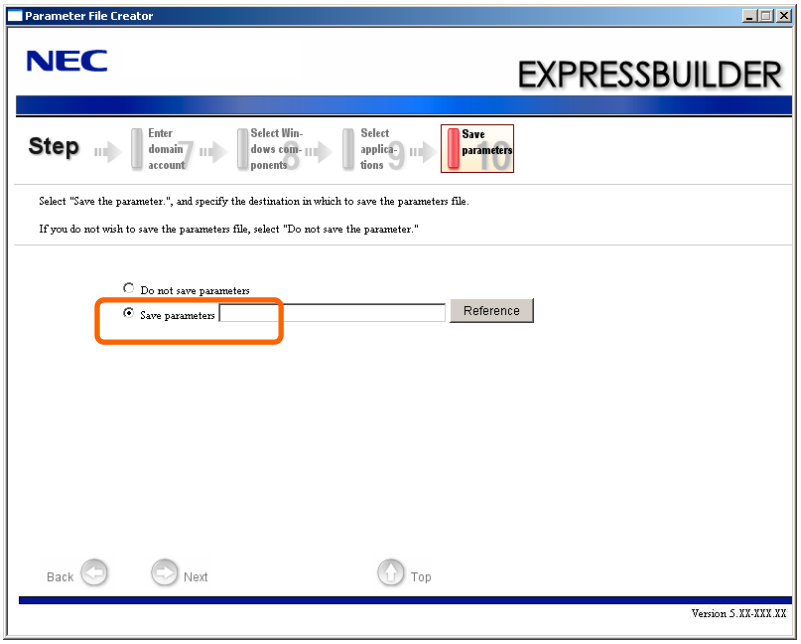
13. Select the installing applications.

[Select applications] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



14. Save the parameters.

[Save parameters] steps are displayed.

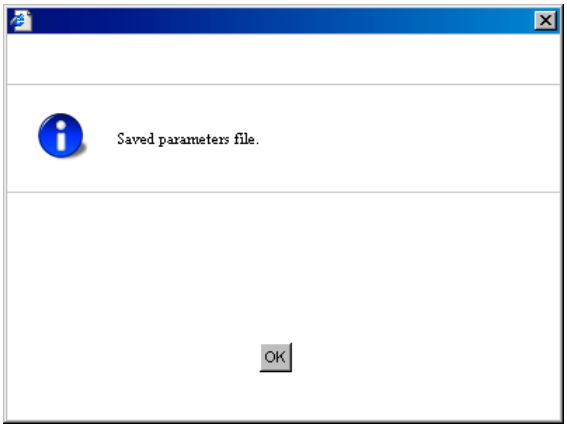


If you want to save the parameters, set the free formatted floppy disk.

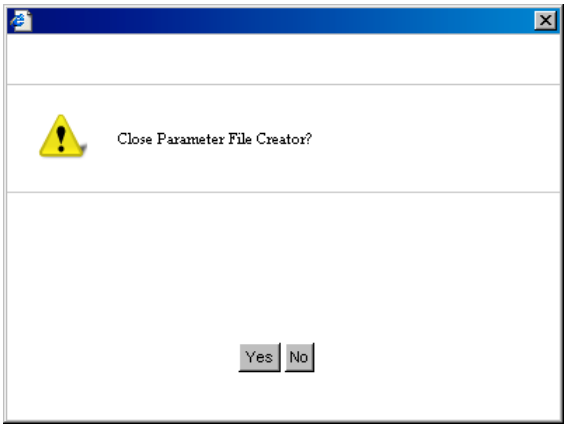
Select [Save parameters], enter the file path of the parameters files into the text box and click [Next].

If not, select [Do not save parameters].

15. Saved to a floppy disk.



Now [the floppy disk containing the parameters file] has been created.



Click [Yes] to exit Parameter File Creator.

NOTES:

- If you modify existing information file (parameter file), click "Load Parameters" at [Load Parameters] screen. Refer to help to modify information file.
- If you cancel operation on the way, click at the upper-right corner of the screen.

NEC ESMPRO

The NEC ESMPRO lets a system administrator manage remote servers across a network. NEC ESMPRO monitors server hardware and software configurations, failures, and performance. With log data collected by NEC ESMPRO, a system administrator can track long-term and short-term performance, monitor server usage, create graphs to record trends, and check server failure rates. The administrator can use the information collected to create more efficient data routing procedures and optimize server usage.

Functions and Features

NEC ESMPRO offers many functions and features for managing remote servers across a network. These features help the system administrator perform daily system operation, system extension, and transfer tasks. Some features of NEC ESMPRO Manager include:

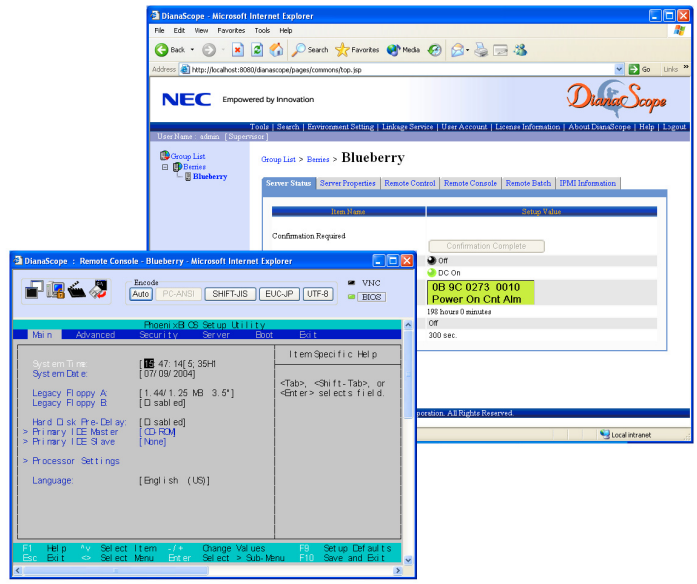
- Hardware and software server configuration
  - Hardware resources mounted in servers, such as the CPU, memory, disks, RAID System, and LAN boards.
  - Software resources, such as operating system information and drivers running on each server.
- Server failures
  - On-screen real-time displays provide the system administrator with the failure type, location, cause, and suggested corrective action.
  - Failure data includes hardware failure information such as system board temperature, memory failure, crashes, and software failure information.
- Performance
  - NEC ESMPRO monitors server performance and displays server usage on the screen and displays information, such as the rate of CPU load, memory usage, disk usage, and LAN traffic. Usage threshold values can help the system administrator monitor and prevent server overloads.

For installation procedure and detailed explanations on NEC ESMPRO, refer to the online document in the NEC EXPRESSBUILDER DVD.

NEC DianaScope

NEC DianaScope is software for the remote management of the server.

See the online documents for details on the functions and installation of NEC DianaScope.



NOTE: You need the server license to activate DianaScope for this product. The server license below is attached to this product.

- DianaScope Additional Server License (1)

Universal RAID Utility

Universal RAID Utility is an application to manage or monitor the following RAID Controllers.

- Onboard RAID Controller (LSI Embededd MegaRAID)
- Internal RAID Controller (equivalent to N8103-116)
- N8103-116 RAID Controller (SAS/SATA, RAID0/1)
- N8103-117 RAID Controller (SAS/SATA, RAID0/1/5/6)

Before attempting to operate Universal RAID Utility, read the "Universal RAID Utility User's Guide" included in NEC EXPRESSBUILDER DVD. The manual explains the installation procedure and notes on operating Universal RAID Utility.

Setup with Express Setup

You can install Universal RAID Utility with Express Setup contained in NEC EXPRESSBUILDER DVD. When you start the Express Setup, a dialog to specify an application appears. Select [Universal RAID Utility] on the dialog.

Manual Setup

Windows

You can start the setup program of Universal RAID Utility from [Autorun Menu].

Click [Setup Software] → [Universal RAID Utility] in [Autorun Menu].

You need to install the following software.

- Microsoft .NET Framework 2.0
- The Runtime component of the Microsoft Visual C++ 2005 SP1

You can install these software from [Autorun Menu] too.

Click [Setup Windows] → [Install the .NET Framework Ver 2.0 Redistributable Package(x86)] (If CPU architecture is x64, [Install the .NET Framework Ver2.0 Redistributable Package(x64)]) in [Autorun Menu] for the setup of Microsoft.NET Framework 2.0.

Click [Setup Windows] → [Install the Microsoft Visual C++ 2005 SP1 Redistributable Package(x86)] (Use the x86 package whatever the CPU architecture may be.) for the setup of the Runtime component of the Microsoft Visual C++ 2005 SP1.

Linux

You need to run the setup.sh in the install image of Universal RAID Utility.

There is the install image of Universal RAID Utility in the following directory of EXPRESSBUILDER.

/*BBB*/lnx/pp/uraidutl

The part of BBB is BBB of the medium number (5.AA-BBB.CC) of EXPRESSBUILDER.

Using Universal RAID Utility via Network

Universal RAID Utility doesn't have the function of management to computer installed RAID Controller via network. If you want to manage it via network, please use the function of remote console (ex. Remote Desktop of Windows).

Easy Configuration

You can not use the function of Easy Configuration to LSI Embedded MegaRAID.

Creating Logical Drive of RAID 6

You must use four or larger Physical Devices for creating the Logical Drive of RAID 6 by Universal RAID Utility. If you want to create the Logical Drive from three Physical Devices, you need to use WebBIOS.

Chapter 7

Maintenance

This chapter describes the daily maintenance of the server and precautions when relocating or storing the server.

MAKING BACKUP COPIES

NEC recommends you make backup copies of your valuable data stored in hard disk drives of the server on a regular basis. For backup storage devices suitable for the server and backup tools, consult with your service representative.

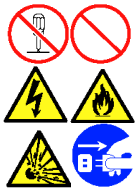
When you have changed the hardware configuration or BIOS configuration, select "System Information Management" and then "Save" of the Off-line Maintenance Utility to make a backup copy of the system information.

Also make a backup copy of the RAID System configuration data if your system is in the RAID System configuration. When your hard disk drives have been auto-rebuilt due to a failure, it is recommended to make a backup copy of the configuration data. To make a backup copy of the configuration data, use the configuration utility that is resident in the FLASH memory on the optional RAID Controller. Refer to the manual supplied with the board.

CLEANING

Clean the server on a regular basis to keep the server in a good shape.

⚠ WARNING



Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.

- Do not disassemble, repair, or alter the server.
- Do not remove the lithium battery.
- Disconnect the power plug before working with the server.

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.

- Avoid installation in extreme temperature conditions.
- Make sure to complete board installation.

Cleaning the Server

For daily cleaning, wipe the external surfaces of the server with a dry soft cloth. Follow the procedure below if stains remain on the surfaces:

IMPORTANT:

- To avoid altering the material and color of the server, do not use volatile solvents such as thinner and benzene to clean the server.
- The power receptacle, the cables, the connectors on the rear panel of server, and the inside of the server must be kept dry. Do not moisten them with water.

1. Make sure that the server is off-powered (the POWER/SLEEP LED goes off).
2. Unplug the power cord of the server from a power outlet.
3. Wipe off dust from the power cord plug with a dry cloth.
4. Soak a soft cloth in neutral detergent that is diluted with cold or lukewarm water, and squeeze it firmly.
5. Rub off stains on the server with the cloth prepared in Step 4.
6. Soak a soft cloth in water, squeeze it firmly, wipe the server with it once again.
7. Wipe the server with a dry cloth.
8. Wipe off dust from the fan exhaust opening on the rear of the server with a dry cloth.

Cleaning the Interior

One of the most important items in a good maintenance program is regular and thorough cleaning of the interior of the server, especially around the mother board.

Dust buildup inside the server can lead to several problems. As dust acts as a thermal insulator, a buildup can prevent proper system cooling. Excessive heat will shorten the life of server components. Also, dust may contain conductive or corrosive materials that can cause short circuits or corrosion of electrical contacts.

How often you should clean the interior of the server depends on the environment in which it is located. For most office environments, you probably should clean the server every 12 months. For more severe environments, clean the interior every 6 months.

Cleaning the interior of the server entails powering off the server and removing the left side cover. You will need a small vacuum cleaner (with plastic tipped nozzle and electrostatic protection), computer grade canned air, and a small brush for cleaning the interior.

Follow the procedure below to clean the interior of the server.

⚠ WARNING

Unplug all power cords.

Unplug all power cords before performing any maintenance. Voltage is present inside the server and display unit even after the power is turned off. All voltage is removed only when the power cord is unplugged.

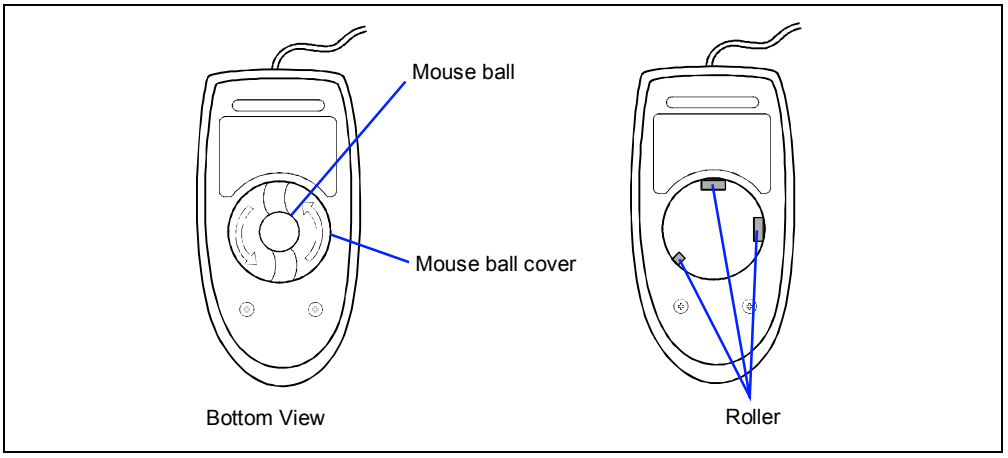
1. Turn off the server and unplug all power cables.
2. Remove the logic cover and drive cover. (See Chapter 9.)
3. Use a small brush to loosen any dust and debris on the mother board.
4. Use computer grade canned air to blow dust off components on the mother board.
5. Use a small vacuum cleaner with plastic tip to vacuum out dust and debris from the interior of the server.
6. Reinstall the covers. (See Chapter 9.)
7. Reconnect all power cables and turn on the server.

Cleaning the Keyboard/Mouse

Make sure that the server and peripheral devices are all off-powered (the POWER/SLEEP LED goes off), and then wipe the keyboard surface with a dry cloth.

The mouse operation depends on the degree of smoothness of the internal ball rotation. To keep the mouse ball clean, use the mouse in a place with little dust. Follow the steps below to clean the mouse regularly:

1. Prepare cold or lukewarm water, neutral detergent, alcohol, two dry soft clothes, and cotton swabs.
2. Make sure that the server is off-powered (the POWER/SLEEP LED goes off).
3. Turn the mouse upside down, and rotate the mouse ball cover counterclockwise to remove it.
4. Take out the ball from the mouse. Cover the bottom of the mouse with your hand, and turn your hand holding the mouse (the mouse is on your palm with the button upward). The mouse ball is released onto your palm.



5. Soak a soft cloth in neutral detergent that is diluted with cold or lukewarm water, and squeeze it firmly.
6. Rub off stains on the mouse ball. Softly wipe the mouse ball with the cloth prepared in Step 5.
7. Wipe the mouse ball with a dry soft cloth.
8. Wipe three small rollers inside the mouse with a cotton swab soaked with alcohol. Wipe stains slowly and carefully by rotating rollers with the tip of the cotton swab.
9. Blow out any dust from the mouse. Protect your eyes from the dust.
10. Put the mouse ball back into the mouse.
11. Place the mouse ball cover, and rotate it clockwise until it is locked.

Cleaning Disc

A dusty disc or dust-accumulated tray causes the device to fail to read data correctly.

Follow the procedure below to clean the tray and disc regularly:

1. Make sure that the server is powered (the POWER/SLEEP LED is lit).
2. Press the tray Open/Close button on the front of the optical disk drive. The tray opens.
3. Hold the disc lightly and take it out from the tray.

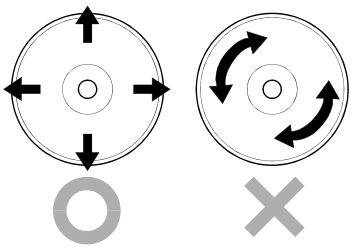
   NOTE: Do not touch the signal side of the disc with your hand.

4. Wipe the tray with a dry soft cloth.

   IMPORTANT: Do not wipe the lens of the optical disk drive. Doing so may damage the lens and may cause a malfunction of the drive.

5. Push on the tray front to close the tray.
6. Wipe the signal side of the disc with a dry soft cloth.

   IMPORTANT: Wipe disc from the center to the outside. Use only disc cleaner if necessary. Cleaning a disc with record spray/cleaner, benzene, or thinner causes damage to the disc contents. At worst, inserting the disc into the server may cause failure.



SYSTEM DIAGNOSTICS

The System Diagnostics runs several tests on the server.

Select [Maintenance Tools] - [Test and diagnostics] in the NEC EXPRESSBUILDER to diagnose the system.

Test Items

The following items are tested in system diagnostics.

- Memory
- CPU cache memory
- Hard disk drive used as a system

IMPORTANT: When executing the system diagnostics, make sure to disconnect the LAN cable. Executing the system diagnostics with the LAN cable connected, the network may be influenced.

NOTE: On checking the hard disk drive, no data is written into the disk.

Startup and Exit of System Diagnostics

There are two ways to diagnose the server: to use the local console (keyboard) of the server itself, and to use the management PC via serial port (remote console).

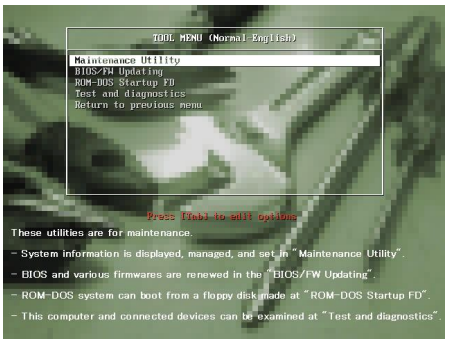
> **IMPORTANT:** Two methods of LAN and the serial port are mentioned in "MAINTENANCE TOOLS" of Chapter 8 "Troubleshooting" in the way of communicating in remote console.
> Use the serial port to execute System Diagnostics with remote console.
> The LAN connection is not for System Diagnostics.

Procedures to start the diagnostics program are as follows:

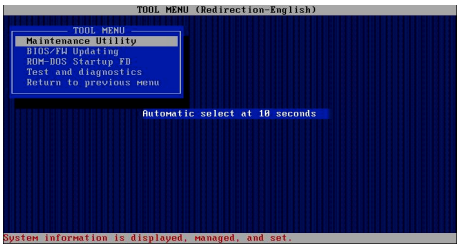
1. Shutdown the OS, and power off the server. Then, unplug the power cord.
2. Disconnect all the LAN cables from the server.
3. Plug the power cord and power on the server.
4. Use the NEC EXPRESSBUILDER DVD to start the system.
5. Select [Maintenance Tools (Normal mode)] when local console of the server is used for, or select [Maintenance Tools (Redirection mode)] when remote console is used for.

> **NOTE:** If the system displays the [Language selection] menu, select [English].

The following menu is displayed on the screen.



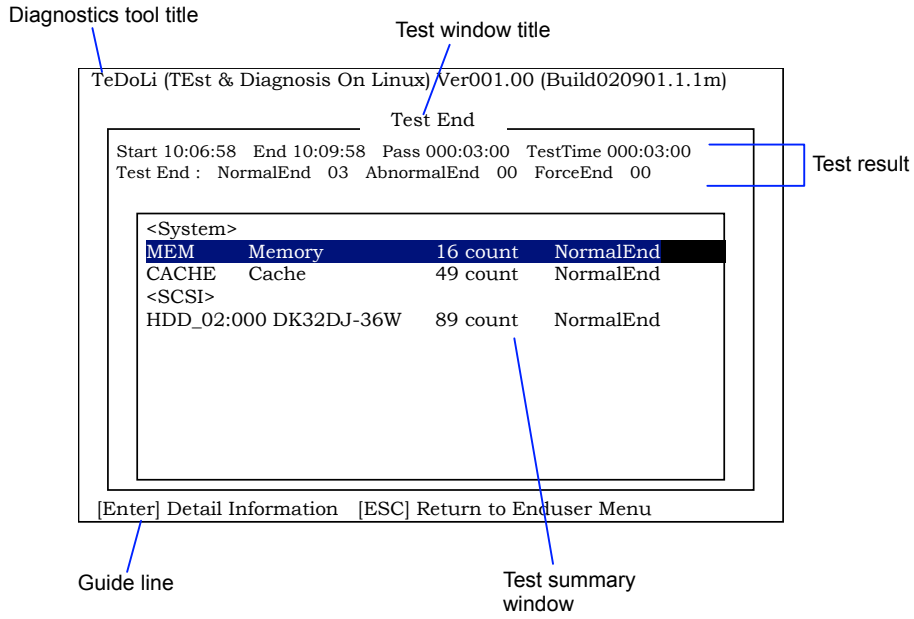
Local console



Remote console

6. Select [Test and diagnostics].

Select [End-User Mode] and the system diagnostics starts. The diagnostics will be completed in approximately three minutes. When the diagnostics is completed, the screen of the display changes as shown below:



– Diagnostics tool title

  Shows the name and version of the diagnostic tool.

– Test window title

  Shows the progress of the diagnostics. "Test End" is displayed when the diagnostics completes.

– Test result

  Shows the start, end, and elapsed time and completion status of the diagnostics.

– Guide line

  Shows the details of the keys to operate window.

– Test summary window

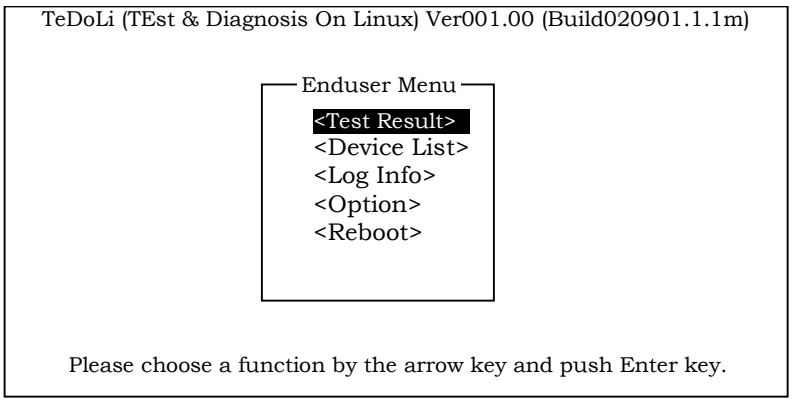
  Shows the results of each test that executed the diagnostics. Move the cursor and press the **Enter** key on the cursor line to display the details of the test.

When an error is detected by the system diagnostics, the relevant test result in the test Summary window is highlighted in red, and "Abnormal End" is displayed in the result on the right side.

Move the cursor to the test that detected the error, and press the **Enter** key. Record the error message that has been output to the Detail Information screen and contact your service representative.

7. Follow the guide line shown at the bottom of the screen, and press the **Esc** key.

   The [Enduser Menu] below is displayed.



<Test Result> Shows the diagnostics completion screen of the above diagnostics.

<Device List> Shows a list of connected devices.

<Log Info> Shows the log information of the diagnostics. It can be saved on a floppy disk.
To save it on a floppy disk, insert a formatted floppy disk to the floppy disk drive, and select <Save(F)>.

<Option> Optional features can be used from this menu.

<Reboot> Reboots the system.

8. Select <Reboot> in the [Enduser Menu] above.

   The server restarts and the system is started from the NEC EXPRESSBUILDER.

9. Exit the NEC EXPRESSBUILDER, and remove the DVD-ROM from the optical disk drive.

10. Power off the server and unplug the power cord from the receptacle.

11. Reconnect all the LAN cables that have been disconnected in Step 2 to the server.

12. Plug in the power cord.

This completes the system diagnostics.

RELOCATING/STORING THE SERVER

Follow the procedure below to relocate or store the server:

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.

- Never attempt to lift the server only by yourself.
- Do not install the server in any place other than specified.
- Do not connect/disconnect any interface cable with the power cord of the server plugged to a power source.

IMPORTANT:

- If the server needs to be relocated/stored due to a change in the floor layout to a great extent, contact the service representative.
- Make sure to make a backup copy of your valuable data in the hard disk drive, if any.
- Make sure not to apply a shock to hard disk drives to relocated the server if the contains any.

1. Take a media out of the server, if any.
2. Power off the server (the POWER/SLEEP LED goes off).
3. Unplug the power cord of the server from a power outlet.
4. Remove all the cables from the server.
5. Hold the server by its bottom with at least three persons to carry the server.

IMPORTANT: Do not hold the front door to lift the server. The front door may be disengaged from the server, causing personal injury.

6. Protect the server with the shock-absorbing materials, and pack it securely.

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Chapter 8

Troubleshooting

If your server does not operate as expected, read this chapter before assuming a failure.

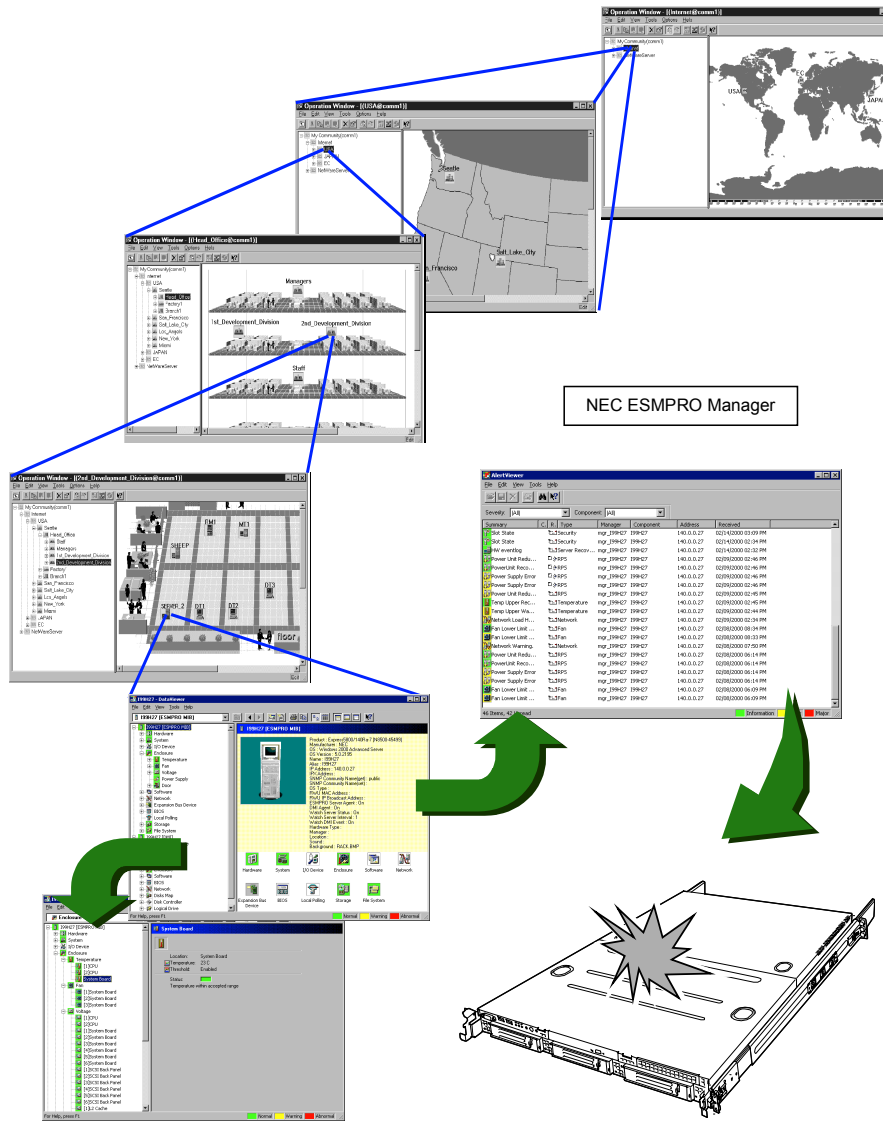
> **NOTE:** For provision against an unexpected failure, it is recommended to install the maintenance utility, NEC ESMPRO, to the server and client computers.

SYSTEM VIEWERS

Monitor the occurrence of fault by NEC ESMPRO during the system operation.

Especially take note on whether any alert is reported to NEC ESMPRO Manager on the management PC. Check whether any alert is reported on the Operation Window, DataViewer, or AlertViewer of NEC ESMPRO Manager.

[Example]



LEDS

The server includes LEDs to indicate the server states by a variety of colors and display patterns on the front panel, hard disk drive, and power supply.

Chapter 2 "Status Indicators" lists the LED displays and their meanings and the actions taken at occurrences of failures.

ERROR MESSAGES

If an error occurs in the server, an error message appears on the display unit connected to the server.

Error Messages after Power-on

Powering on the server automatically starts the self-diagnostic program, POST (Power On Self-Test). When the POST detects any error, it displays an error message and its measure on the display unit.

Follow the table below to troubleshoot such errors. However, even when there is no hardware failure, use of the keyboard or mouse at the following timing causes the POST to assume a keyboard controller error and stop processing.

- Immediately after the server is powered
- Immediately after the system is rebooted in response to a keyboard instruction (simultaneous key entry of **Ctrl** + **Alt** + **Delete**)
- Immediately after the system is rebooted in response to an OS instruction
- During hardware initialization following restart of the POST

When the POST detects a hardware failure due to the above reason, restart the server once again. If the same error message reappears, you may assume there is no hardware error. To ensure normal operation of the server, however, make sure to follow the following restrictions.

- Do not make any keyboard entry or use the mouse before the memory count appears on the screen following the server power-on.
- Do not make any keyboard entry or use the mouse before the start-up message of the SCSI Configuration Utility appears on the screen following the server reboot.

IMPORTANT: Take a note on the on-screen message before contacting your service representative. The alarm indication would be a great help for maintenance.

POST Error Messages

When POST detects an error, it displays an error message on the display unit screen. The following table lists error messages and actions to take.

IMPORTANT: Take a note on the messages displayed before consulting with your service representative. Alarm messages are useful information for maintenance.

Error code	Error message	Recommended Action
0200	Failure Fixed Disk.	Contact your service representative.
0210	Stuck Key.	Disconnect the keyboard and connect it again.
0211	Keyboard error	Disconnect the keyboard and connect it again. If the error cannot be corrected, contact your service representative.
0213	Keyboard locked - Unlock key switch.	Release the lock of the key switch. If the error cannot be corrected in spite of the release of the lock, contact your service representative.
0220	Monitor type does not match CMOS - Run SETUP.	Start the SETUP. If the error cannot be corrected in spite of the start of SETUP, contact your service representative.
0230	System RAM Failed at offset.	Contact your service representative.
0231	Shadow Ram Failed at offset.	
0232	Extended RAM Failed at address line.	
0250	System battery is dead - Replace and run SETUP.	Contact your service representative to replace the battery. (After restarting the computer, start the SETUP to provide the setting again.)
0251	System CMOS checksum bad - Default configuration used.	The default values have just been set. Start the SETUP to provide the setting again. If the error cannot be corrected, contact your service representative.
0252	Password checksum bad - Passwords cleared.	The password has just been cleared. Start the SETUP to provide the setting again.
0260	System timer error.	Start the SETUP to set the date and time again. If the same error occurs successively in spite of the resetting, contact your service representative.
0270	Real time clock error.	
0271	Check date and time setting.	
0280	Previous boot incomplete - Default configuration used.	Start the SETUP to provide the setting again.
0281	Memory size found by POST differed from EISA CMOS.	Initialize EISA CMOS.
02D0	System cache error - Cache disabled.	The cache cannot be used. Contact your service representative.

Error code	Error message	Recommended Action
02D1	System Memory exceeds the CPU's caching limit.	Contact your service representative.
02F4	EISA CMOS not write able.	
02F5	DMA Test Failed.	
02F6	Software NMI Failed.	
02F7	Fail-safe Timer NMI Failed.	
0611	IDE configuration changed	Check IDE configuration.
0612	IDE configuration error - device disabled	
0613	Com A configuration changed	Check COM A configuration.
0614	Com A config. error - device disabled	
0615	Com B configuration changed	Check COM B configuration.
0616	Com B config. error - device disabled	
0B22	Processors are installed out of order.	Request the maintenance to replace the CPU.
0B28	Unsupported CPU detected on CPU socket 1.	Make sure that the server supports the CPU. If you are not sure, contact your service representative to request the maintenance.
0B29	Unsupported CPU detected on CPU socket 2.	
0B30	FAN1 Alarm occurred.	Clean the internal cooling fans. Contact your service representative to replace the fan.
0B31	FAN2 Alarm occurred.	
0B32	FAN3 Alarm occurred.	
0B33	FAN4 Alarm occurred.	
0B34	FAN5 Alarm occurred.	
0B35	FAN6 Alarm occurred.	
0B36	FAN7 Alarm occurred.	
0B37	FAN8 Alarm occurred.	
0B38	FAN9 Alarm occurred.	
0B39	FAN10 Alarm occurred.	
0B3A	FAN11 Alarm occurred.	
0B3B	FAN12 Alarm occurred.	
0B3C	FAN13 Alarm occurred.	
0B3D	FAN14 Alarm occurred.	
0B3E	FAN15 Alarm occurred.	
0B42	Resource Conflict	Contact your service representative.
0B43	Warning: IRQ not configured	
0B45	System configuration Data Write Error	
0B50	Processor #1 with error taken off line.	Because an error is detected in CPU, the system is forcibly started. Contact your service representative.
0B51	Processor #2 with error taken off line.	
0B5F	Forced to use Processor with error	
0B60	DIMM group #1 has been disabled	Contact your service representative.
0B61	DIMM group #2 has been disabled	
0B62	DIMM group #3 has been disabled	
0B63	DIMM group #4 has been disabled	
0B64	DIMM group #5 has been disabled	
0B65	DIMM group #6 has been disabled	
0B70	The error occurred during temperature sensor reading.	Contact your service representative.

Error code	Error message	Recommended Action
0B71	System Temperature out of the range.	Contact your service representative to replace the fan.
0B74	The error occurred during voltage sensor reading.	Contact your service representative.
0B75	System voltage out of the range.	
0B80	BMC Memory Test Failed.	Turn off the power once and then on again to start the server. If the error cannot be corrected, contact your service representative.
0B81	BMC Firmware Code Area CRC check failed.	
0B82	BMC Core Hardware failure.	
0B83	BMC IBF or OBF check failed.	
0B8A	BMC SEL area full.	Start the SETUP and select [Server] - [Event Log configuration] - [Clear All Error Logs] and press **Enter** to clear event logs.
0B8B	BMC progress check timeout.	Turn off the power once and then on again to start the server. If the error cannot be corrected, contact your service representative.
0B8C	BMC command access failed.	
0B8D	Could not redirect the console - BMC Busy -	
0B8E	Could not redirect the console - BMC Error -	
0B8F	Could not redirect the console - BMC Parameter Error -	Turn off the power once and then on again to start the server. If the error cannot be corrected, contact your service representative.
0B90	BMC Platform Information Area corrupted.	
0B91	BMC update firmware corrupted.	
0B92	Internal Use Area of BMC FRU corrupted.	This is not a fatal error. Turn off the power once and then on again to restart the server. If the error cannot be corrected, contact your service representative.
0B93	BMC SDR Repository empty.	Turn off the power once and then on again to restart the server. If the error cannot be corrected, contact your service representative.
0B94	IPMB signal lines do not respond.	This is not a fatal error. Turn off the power once and then on again to restart the server. If the error cannot be corrected, contact your service representative.
0B95	BMC FRU device failure.	This is not a fatal error. Turn off the power once and then on again to restart the server. If the error cannot be corrected, contact your service representative.
0B96	BMC SDR Repository failure.	Turn off the power once and then on again to start the server. If the error cannot be corrected, contact your service representative.
0B97	BMC SEL device failure.	
0B98	BMC RAM test error.	
0B99	BMC Fatal hardware error.	
0B9A	BMC not responding.	Update the RMC firmware. If the error cannot be corrected, contact your service representative.

Error code	Error message	Recommended Action
0B9B	Private I2C bus not responding.	Turn off the power once and then on again to start the server. If the error cannot be corrected, contact your service representative.
0B9C	BMC internal exception.	
0B9D	BMC A/D timeout error.	
0B9E	SDR repository corrupt.	
0B9F	SEL corrupt.	
0BB0	SMBIOS – SROM data read error.	Contact your service representative.
0BB1	SMBIOS – SROM data checksum bad.	
8068	Unsupported Processor Speed detected on CPU Slot 1.	Contact your service representative.
8069	Unsupported Processor Speed detected on CPU Slot 2.	
8100	Memory Error detected in DIMM group #1.	Contact your service representative to replace the DIMM in the relevant group.
8101	Memory Error detected in DIMM group #2.	
8102	Memory Error detected in DIMM group #3.	
8103	Memory Error detected in DIMM group #4.	
8104	Memory Error detected in DIMM group #5.	
8105	Memory Error detected in DIMM group #6.	
8150	NVRAM Cleared by Jumper	Start SETUP and provide setting again.
8151	Password Cleared by Jumper	Start SETUP and set password again.
8160	Mismatch Processor Type/Speed detected on Processor 1.	Contact your service representative.
8161	Mismatch Processor Type/Speed detected on Processor 2.	
None	Expansion ROM not initialized – PCI Mass Storage Controller in slot n (n: slot number)	Disable initialization of the optional device expansion ROM by using the BIOS SETUP utility (see Chapter 4).
	H/W Configuration of BMC is corrupted. !! Update BMC F/W Configuration by configuration tool !! !! Refer to BMC configuration manual !!	Use the NEC EXPRESSBUILDER to configure the remote management card (see Chapter 6).

Beep Codes

If an error occurs during the POST, the server beeps, indicating the type of error.

Each number indicates the number of short beeps, and a hyphen indicates a pause. For example, the beep interval 1-5-2-2 indicates 1 beep, pause, 2 beeps, pause, 2 beeps, pause, and 3 beeps notifying that no processor is detected on the mother board.

Beep code	Description	Recommended action
1-2	Option ROM initialization error	1. Check if the optional add-in card is properly installed. 2. Run the BIOS SETUP utility to check the IRQ assignment. 3. Ask your service representative to replace the add-in card or mother board..
3-3	ROM checksum error	Replace the mother board.
1-2-2-3		
1-3-1-1	DRAM refresh test error	1. Check if the DIMM is properly installed. 2. Remove the DIMM once, and then re-install it to check if it operates normally. 3. Ask your service representative to replace the failed DIMM or mother board.
1-3-1-3	Keyboard controller error	1. Check if the keyboard is properly connected. 2. Replace the mother board.
1-3-3-1	No memory or capacity check error	1. Check if the DIMM is properly installed. 2. Remove the DIMM once, and then re-install it to check if it operates normally. 3. Ask your service representative to replace the failed DIMM or mother board..
1-3-4-1	DRAM address error	
1-3-4-3	DRAM test Low Byte error	
1-4-1-1	DRAM test High Byte error	
1-5-1-1	CPU startup error	1. Check if the CPU is properly installed. 2. Remove the CPU once, and then re-install it to check if it operates normally. 3. Ask your service representative to replace the failed CPU.
1-5-2-2	No CPU installed	
1-5-4-2	AC power interrupted	The AC power supply is interrupted due to power failure or momentary voltage drop and the system is restarted. This is not an error.
1-5-4-4	Abnormal voltage	Replace the mother board.
2-1-2-3	BIOS ROM copyright test error	Replace the mother board.
2-2-3-1	Unexpected interrupt test error	

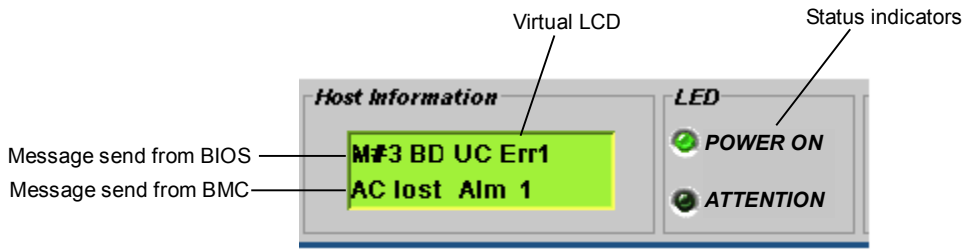
Error Messages on Virtual LCD

NEC EXPRESSSCOPE Engine 2 (Remote Management Controller) on your server board allows you to monitor the server status on the WEB browser-based screen of the client PC via network.

The virtual LCD (16 digits x 2 lines) in the "Host Information" area displays the POST codes and status message.

When POST detects an error, the POST error code is displayed on the virtual LCD upon completion of POST. See the table for POST error codes for details.

Example:



Messages displayed on upper line (BIOS message)

On-screen message	Description	Action
XX BIOS Rev YYYY	POST in progress. XX: POST code, YYYY: BIOS version	This is not an error.
CPU Reconfigured	POST completes with processor degraded.	Contact your service representative. Try the following steps to cancel the error. 1. Start BIOS SETUP. 2. Select [Main] - Processor Settings] - [Processor Retest] - [Yes]. 3. Select [Exit] - [Exit Saving Changes].
Mem Reconfigured	POST completes with memory degraded.	Contact your service representative. Try the following steps to cancel the error. 1. Start BIOS SETUP. 2. Select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes]. 3. Select [Exit] - [Exit Saving Changes].

On-screen message	Description	Action
Memory C-Err XX	A correctable error frequently occurs in DIMM #XX.	Contact your service representative.
Memory U-Err XX	An uncorrectable error has occurred in DIMM #XX.	
PCI Bus PERR XX	A PERR has occurred in the PCI bus XX.	
PCI Bus SERR XX	A SERR has occurred in the PCI bus XX.	
Mem Err Disable	A correctable memory error frequently occurred.	
Prepare To Boot	POST completes normally.	This is not an error.

Messages displayed on lower line (BMC message)

When the following messages are displayed on the virtual LCD, restart your server by turning off and on. If an error still occurred, contact your service representative for maintenance.

On-screen message	Description
240VA Power Down	Power supply failure occurred.
BB +1.5v Alm XX	Voltage alarm occurred on the mother board. XX=09: high voltage (fetal) XX=07: high voltage (warning) XX=02: low voltage (warning) XX=00: low voltage (fetal)
BB +1.8v Alm XX	
BB +3.3v Alm XX	
BB +5.0v Alm XX	
BB +12v Alm XX	
BB P_Vtt Alm XX	
BB Temp1 Alm XX	Mother board thermal error occurred. XX=09: high voltage (fetal) XX=07: high voltage (warning) XX=02: low voltage (warning) XX=00: low voltage (fetal)
DUMP Request !	Dump switch is pressed.
OS shutdown Alm	OS shutdown alarm occurred.
Power On Cnt Alm	Power supply failure occurred.
Power Unit 1 Alm	Power unit #1 Failure occurred.
Power Unit 2 Alm	Power unit #2 Failure occurred.
Proc Missing	Processor is not found.
Proc 1 T-Trip	Thermal Trip occurred on processor #1 or #2. The system is forcibly turned off.
Proc 2 T-Trip	
Proc1 Therm % XX	Processor #1 or #2 thermal error occurred. XX=09: high temperature (fetal) XX=07: high temperature (warning) XX=02: low temperature (warning) XX=00: low temperature (fetal)
Proc2 Therm % XX	
Proc1 VccpAlm XX	Voltage alarm occurred on processor #1 or #2. XX=09: high voltage (fetal) XX=07: high voltage (warning) XX=02: low voltage (warning) XX=00: low voltage (fetal)
Proc2 VccpAlm XX	

On-screen message	Description
Processor 1 IERR	IERR occurred on processor #1 or #2.
Processor 2 IERR	
SMI timeout	SMI timeout occurred.
Sys Fan 1 Alarm	FAN#1 alarm occurred.
Sys Fan 2 Alarm	FAN#2 alarm occurred.
Sys Fan 3 Alarm	FAN#3 alarm occurred.
Sys Fan 4 Alarm	FAN#4 alarm occurred.
Sys Fan 5 Alarm	FAN#5 alarm occurred.
Sys Fan 6 Alarm	FAN#6 alarm occurred.
Sys Fan 7 Alarm	FAN#7 alarm occurred.
Sys Fan 8 Alarm	FAN#8 alarm occurred.
Sys Fan 9 Alarm	FAN#9 alarm occurred.
Sys Fan 10 Alarm	FAN#10 alarm occurred.
Sys Fan 11 Alarm	FAN#11 alarm occurred.
Sys Fan 12 Alarm	FAN#12 alarm occurred.
Sys Fan 13 Alarm	FAN#13 alarm occurred.
Sys Fan 14 Alarm	FAN#14 alarm occurred.
Sys Fan 15 Alarm	FAN#15 alarm occurred.
VBAT Alm XX	Voltage alarm in lithium battery occurred. XX=09: high voltage (fetal) XX=07: high voltage (warning) XX=02: low voltage (warning) XX=00: low voltage (fetal)
WDT timeout	Watchdog timer timeout error occurred.

SOLVING PROBLEMS

When the server fails to operate as expected, see the following to find out your problem and follow the instruction given before asking for repair.

If the server still fails to operate successfully after solving your problem, take a note on the on-screen message and contact your service representative.

Problems with the Server

Fail to power on the server:

- ❑ Is the server is properly supplied with power?
  - → Check if the power cord is connected to a power outlet (or UPS) that meets the power specifications for the server.
  - → Make sure to use the power cord provided with the server. Check the power cord for broken shield or bent plugs.
  - → Make sure the power breaker for the connected power outlet is on.
  - → If the power cord is plugged to a UPS, make sure the UPS is powered and it outputs power. See the manual that comes with the UPS for details.

    Power supply to the server may be linked with the connected UPS using the BIOS setup utility of the server.

    <Menu to check: [Server] - [AC-LINK]>
- ❑ Did you press the POWER switch?
  - → Press the POWER switch on the front of the server to turn on the power (the POWER LED lights).

Fail to power off the server:

- ❑ Is the POWER switch enabled?
  - → Restart the server and start the BIOS setup utility.

    <Menu to check: [Security] - [Power Switch Inhibit]>
- ❑ Is the server running in the Secure Mode?
  - → The POWER switch is disabled in the Secure Mode. (Forced shutdown is also not available.) To release the Secure Mode, enter the password specified with the BIOS SETUP utility.

No screen display appears with beep:

→ Check whether DIMMs are connected to the mating connectors firmly.

→ Check whether DIMMs of different specifications are installed in the specific bank. See Chapter 9 for the specifications of DIMMs.

→ DIMMs must be populated in pairs and in the following order:
11 and 21, 31 and 41, 12 and 22, 32 and 42, 13 and 23, and 33 and 43.

→ Installed DIMMs must be the same speed and must all be registered.

→ Take a note of beep code pattern, and take appropriate action according to the table listed earlier in "Beep Codes".

POST fails to complete:

❑ Is the DIMM board installed?

→ At least two DIMM boards are required for operation.

→ DIMMs must be populated in pairs and in the following order:
11 and 21, 31 and 41, 12 and 22, 32 and 42, 13 and 23, and 33 and 43.

→ Installed DIMMs must be the same speed and must all be registered.

❑ Is the memory size large?

→ The memory check may take a few seconds if the memory size is large. Wait for a while.

❑ Did you perform any keyboard or mouse operation immediately after you started the server?

→ If you perform any keyboard or mouse operation immediately after start-up, POST may accidentally detect a keyboard controller error and stops proceeding. In such a case, restart the server once again. Do not perform any keyboard or mouse operation until the BIOS start-up message appears when you restart the server.

❑ Does the server have contains appropriate memory boards or PCI devices?

→ Operation of the server with unauthorized devices is not guaranteed.

Fail to access to internal or external devices (or such devices fail to operate):

- ❑ Are cables properly connected?

  → Make sure that the interface cables and power cord are properly connected. Also make sure that the cables are connected in the correct order.

- ❑ Is the power-on order correct?

  → When the server has any external devices connected, power on the external devices first, then the server.

- ❑ Did you install drivers for connected optional devices?

  → Some optional devices require specific device drivers. Refer to the manual that comes with the device to install its driver.

- ❑ Is BIOS configuration correct?

  → When the server has PCI devices connected, make sure to set the PCI device interrupt and others with the BIOS SETUP utility of the server. (Most PCI devices generally do not require any change to the configuration, but some boards do require specific settings. Refer to the manual that comes with the board for details to make correct settings.

  <Menus to check: [Advanced] - [PCI Configuration] - [PCI Slot xx ROM]
  x: PCI slot number>

  → Some devices connected to the serial or parallel port may require I/O port address or operation mode settings. Refer to the manual that comes with the board for details to make correct settings.

  <Menu to check: [Advanced] - [Peripheral Configuration]>

The POWER switch and sleep feature are disabled:

- ❑ Is the POWER switch masked by the BIOS feature?

  → The BIOS can disable power-off with the POWER switch after the operating system is started (including shutdown by pressing the POWER switch for at least four seconds).
  Run the BIOS SETUP utility to change settings (see Chapter 4).

The keyboard or mouse fails to operate:

- ❑ Is the cable properly connected?

  → You must use the provided keyboard/mouse branch cable (Y cable) for this server. Make sure that the provided cable is connected to the correct connector on the rear of the server.

  → The keyboard or mouse does not operate if it is connected when the server is powered (not applicable to USB devices). Power of the server first and connect it properly.

- ❑ Is BIOS configuration correct?

  → The keyboard and mouse may be disabled with the BIOS SETUP utility of the server. Check the settings with the BIOS SETUP utility.

  <Menus to check: [Advanced] - [Numlock]>

- ❑ Are the server drivers installed?

  → Refer to the manual that comes with your OS to check that the keyboard and mouse drivers are installed. (These drivers are installed along with the OS.) Some OS's allow you to change the keyboard and mouse settings. Refer to manual that comes with your OS to check that the keyboard and mouse settings are correct.

Fail to access to the disc:

- ❑ Is the disc properly set in the optical disk drive tray?

  → The tray is provided with a holder to secure the disc. Make sure that the disc is placed properly in the holder.

- ❑ Is the disc applicable to the server?

  → The disc for Macintosh is not available for use.

- ❑ Is the CD/FDD bay installed correctly?

  → Reinstall the CD/FDD bay (see Chapter 9).

Inserted the correct disc but the message like the following is displayed:

```
The CD-ROM is not inserted or the wrong CD-ROM is inserted.
Please insert the correct CD-ROM.
OK
```

- ❑ Is the data side of the disc dirty or injured?

  → Take the disc out of the optical disk drive, confirm that it is not dirty or injured, reset and click [OK].

Fail to access the hard disk drive:
(Refer to the documentation supplied with the RAID Controller.)

- ❑ Is the hard disk drive applicable to the server?

  → Operation of any device that is not authorized by NEC is not guaranteed.

- ❑ Is the hard disk drive properly installed?

  → Make sure to lock the hard disk drive with the lever on its handle. The hard disk drive is not connected to the internal connector when it is not completely installed (see Chapter 9).

Fail to access the (internal or external) SCSI devices:

- ❑ Is the SCSI device applicable to the server?

  → Operation of any SCSI device that is not authorized by NEC is not guaranteed.

- ❑ Are SCSI devices properly configured?

  → When the server has external SCSI devices connected, hard disk drive settings, including SCSI ID and terminator, are required. Refer to the manual that comes with the SCSI device for details.

- ❑ Are the SCSI controllers (including optional controllers) properly configured?

  → Use the SCSI BIOS setup utility for proper configuration of SCSI devices connected to the SCSI connector on the mother board. When the server has an optional SCSI controller installed and SCSI devices connected to it, use the SCSI BIOS setup utility that comes with the optional SCSI controller for proper configuration. See the manual that comes with the optional SCSI controller for details.

Event logs in using Intel Network adapter teaming

Event Type: Warning
Event Source: IANSMiniport
Event Category: None
Event ID: 11
Description: Adapter link down: Intel(R)PRO/1000 ----

Event Type: Warning
Event Source: IANSMiniport
Event Category: None
Event ID: 13
Description: Intel(R)PRO/1000 ---- has been deactivated from the team.

Event Type: Error
Event Source: IANSMiniport
Event Category: None
Event ID: 16
Description: Team #0: The last adapter has lost link.
Team network connection has been lost.

Event Type: Warning
Event Source: IANSMiniport
Event Category: None
Event ID: 22
Description: Primary Adapter does not sense any Probes:
Intel(R)PRO/1000 ---- Possible reason: partitioned Team.

Above-mentioned event log will appear when the system starts.

There is no problem in LAN driver operation.

The server is not found on the network:

- ❑ Is the LAN cable connected?

  → Make sure to connect the LAN cable to the network port on the rear of the server. Also make sure that the LAN cable to use conforms with the network interface standard.

- ❑ Is BIOS configuration correct?

  → The internal LAN controller may be disabled with the BIOS SETUP utility of the server. Check the setting with the BIOS SETUP utility.

  <Menus to check:

  [Advanced] - [PCI Configuration] - [Onboard LAN] - [LAN Controller]>

- ❑ Have the protocol and service already configured?

  → Install the distinctive network driver for the server. Make sure that the protocol, such as TCP/IP, and services are properly specified.

- ❑ Is the transfer speed correct?

  → Open the network property dialog box in control panel to specify the "Link Speed & Duplex" value the same as the value specified for HUB.

Wake on LAN does not start from standby state.

- ❑ Is Hub set to Auto-Negotiation? Or, Is the client set to Auto-Negotiation/optimum speed?

  → For both hub and client, Wake on LAN does not start from the standby state if the speed is fixed to 1000Mbps.

Problems with RAID System and RAID Controller

Check the following if the server configuring a RAID System does not operate properly or a management utility does not operate correctly. If a relevant item is found, follow the processing method.

Fail to install the OS:

- ❑ Is the RAID Controller configured?

  → Provide proper configuration for the RAID Controller by using the LSI Software RAID Configuration Utility or WebBIOS.

Fail to start the OS:

- ❑ Is the BIOS of the RAID Controller changed?

  → Set the BIOS correctly by using the LSI Software RAID Configuration Utility or WebBIOS.

- ❑ Does POST recognize the RAID Controller?

  → After making sure that the RAID Controller is connected correctly, then power on the server.

  If the RAID Controller is not recognized correctly despite correct connection, the RAID Controller may be failed. Contact your service representative.

Rebuild fails:

- ❑ Is the capacity of the hard disk drive to be rebuilt sufficient?

  → The hard disk drive to be rebuilt should have the same capacity of the failed had disk drive.

- ❑ Is RAID0 configured?

  → RAID0 has no data redundancy, therefore, Rebuild is disabled in the RAID0 configuration. Replace the failed hard disk drive, create the configuration data again and initialize the hard disk drives. Then recover the data by using backup data.

Auto rebuild fails:

- ❑ Was a sufficient time taken for hot swap of hard disk drives?

  → To allow the auto rebuild to operate correctly, it should take 90 seconds or longer for the interval between the removal of the failed hard disk drive and the installation of a new hard disk drive.

- ❑ Is configuration correct?

  → Check the setting of auto rebuild by using the LSI Software RAID Configuration Utility. <Menus to check: Top menu - [Objects] - [Adapter] - [Auto Rebuild]>

  * Auto Rebuild cannot be specified in WebBIOS.

A hard disk drive fails:

Contact your service representative.

Cannot enter standby:

→ If you use LSI Embedded MegaRAID™, system may not enter standby with heavy I/O.

Cannot enter Hibernation:

→ If you use LSI Embedded MegaRAID™, system may not enter hibernation with heavy I/O.

Physical device is not correctly displayed on Universal RAID Utility

→ If you use LSI Embedded MegaRAID™, a part of information on a physical device is not correctly displayed on Universal RAID Utility.
It is no problem.

Problems with Windows

There are some cases that an event log is registered as follows when you install Windows Server 2003 x64 Editions.

Source: DCOM
Category: Error
Event ID: 10016
Description: The application-specific permission settings do not grant Local Activation permission for the COM server application with CLSID {555F3418-D99E-4E51-800A-6E89CFD8B1D7} to the user {NT AUTHORITY\LOCAL SERVICE} SID {S-1-5-19}.
This security permission can be modified using the component Services administrative tool.

→ It is not a problem in operating the system.

There are some cases that an event log is registered as follows when you install Windows Server 2003 x64 Editions.

Event Source: Service Control Manager
Event Type: Error
Event ID: 7011
Description: Timeout (30000 milliseconds) waiting for a transaction response from the IMAP4Svc service.

→ When this event is not registered by rebooting the system, it is not a problem in operating the system.

There are some cases that an event log is registered as follows when you operate Windows Server 2003 R2.

Source: IPMIDRV

Type: Error

Event ID: 1001

Description: The IPMI device driver attempted to determine if the system supported an IPMI BMC device. The driver attempted to detect the presence of the IPMI BMC by searching the SMBIOS for Type 38 record. But either no record was found or the record was not compatible with the version of the device driver.
If a SMBIOS Type 38 record was detected, the Dump Data field of the event contains a binary representation of the record.

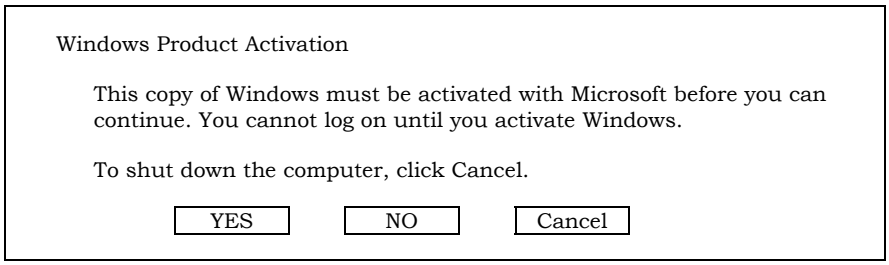
→ If you use "Hardware Management" which is provided by Windows Server 2003 R2, above-shown event log will be registered.

For more details, refer to "Enabling Microsoft Windows Server 2003 R2 Hardware Management" on the following site.

[NEC Express5800 Web Site]

http://www.nec.co.jp/express/download/W2K3_R2

The system displays the message below and fails to log on.



→ In Windows Server 2003, the above message will be displayed if you use the operating system without executing the license authentication. Select "Yes", and execute the procedure for license authentication.

Cannot install the operating system correctly.

❑ Did you confirm the notes on installing the operating system?

→ See Chapter 6.

During installation, the following warning is registered in the System Log of the Event Viewer:

```
Error detected on the device \Device\CdRom0
during the paging operation.
```

→ There is no problem on this issue.

Fail to start the OS:

- ❑ Is a floppy disk in the floppy disk drive?

  → Take out the floppy disk and restart the server.

- ❑ Is the NEC EXPRESSBUILDER DVD in the optical disk drive?

  → Take out the NEC EXPRESSBUILDER DVD and restart the server.

- ❑ Is the OS broken?

  → Use recovery process to recover the system.

The OS presents unstable operation:

- ❑ Did you update the system?

  → Installing a network drive after installation of the OS may cause unstable operation. Use the NEC EXPRESSBUILDER DVD to update the system. (See Chapter 6.)

The system does not restart automatically when a stop error occurs, though the system is adjusted to automatically restarting:

→ When the system does not restart automatically, restart it manually.

The system restarts automatically when a stop error occurs, though the system is NOT adjusted to automatically restarting:

→ There is no problem about this issue.
Check the System Event Log to confirm that STOP error occurred.

Cannot turn the power OFF at the blue screen:

→ If you want to turn off the power at the blue screen, execute forced shutdown (forced shutdown: continue to press POWER/SLEEP switch for 4 seconds). The power will not be turned off if you press the switch for less than 3 seconds.

The PXE boot (network boot) fails or the server is not found on the network:

- ❑ Is the cable connected properly?

  → Connect the proper cable to the network port on the rear of the Express server. In addition, make sure that the used cable conforms to the network interface standard.

- ❑ Is BIOS configuration correct?

  → The internal LAN controller may be disabled with the BIOS SETUP utility of the server. Check the setting with the BIOS setup utility.

- ❑ Have the protocol and service already configured?

  → Install the distinctive network driver for the server. Make sure that the protocol, such as TCP/IP, and services are properly specified.

- ❑ Is the transfer speed correct?

  → Open the network property dialog box in control panel to specify the link speed and duplex value the same as the value specified for HUB.

The Telnet Service is not installed.

→ Adjust the computer name to 14 characters or less, and then install the Telnet Service according to <How to install the Telnet Service>.

<How to install the Telnet Service>

1. Click [Run] on Start menu.
2. Type "tlntsvr /service" in the [Open] box, and click [OK].
3. Click Start menu, point to [Control Panel] and click [Computer Management] and then click the [Services] to specify whether the Telnet Service is registered.

   * When the installation of Telnet Service is finished, there is no problem if the computer name is set to 15 characters or more.

Power ON/OFF (Wake On LAN) feature does not work:

→ Immediately after the AC power is turned on, the Remote Power ON/OFF feature (Wake ON LAN) is disabled. Start Windows 2003 once, provide settings as shown below, then shutdown the system. After restart, the Remote Power On/Off feature is available unless the AC power is turned off.
Select [Start] → [Administrative Tools] → [Computer Management].
Select Device Manager, double-click [Intel(R) PRO/1000EB Network Connection with I/O Acceleration #n] under Network Adapter, and specify as follows in [Detail] tab.

PME: [ON]

Wake On: [Magic Packet]

Fail to start the OS with the /3GB switch

→ System often fails to start the OS with the /3GB switch.

In this case, please adjust the capacity of the user mode area using the /userva switch in reference to the following URL.

http://support.microsoft.com/kb/316739/en

Problems with NEC EXPRESSBUILDER

When the server is not booted from the NEC EXPRESSBUILDER DVD, check the following:

- ❑ Did you set the NEC EXPRESSBUILDER during POST and restart the server?

  → If you do not set the NEC EXPRESSBUILDER during POST and restart the server, an error message will appear or the OS will boot.

- ❑ Is BIOS configuration correct?

  → The boot device order may be specified with the BIOS SETUP utility of the server. Use the BIOS SETUP utility to change the boot device order to boot the system from the optical disk drive first.

  <Menu to check: [Boot]>

If [OS installation ***default*] is selected at BOOT Selection screen, following message is displayed.**

After this message appears, check the error and take the appropriate corrective action according to the message listed in the table below.

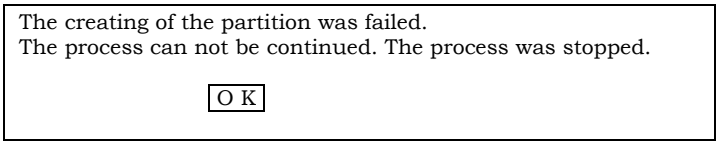
Message	Cause
This EXPRESSBUILDER version was not designed for this computer. Insert the correct version and click [OK]. (When you click [OK], the computer reboots.)	This NEC EXPRESSBUILDER version is not designed for this server. Execute the NEC EXPRESSBUILDER on the compliant server.
EXPRESSBUILDER could not get the hardware parameters written in this motherboard. This version is not designed for this computer or the motherboard may be broken. (When you click [OK], the computer reboots.)	This message is shown when NEC EXPRESSBUILDER could not find system-specific information because of mother board exchange and so on.
The hardware parameters written in this motherboard are incorrect. This version is not designed for this computer or the motherboard may be broken.	

Problems with Express Setup

The system partition is created by size smaller than specified value.

→ In Express Setup, there are some cases that the system partition is created by size about 8MB smaller than specified size.
It is not a problem in operating the system.

Following message appeared when you tried to install Express Setup to the hard disk drive that has smaller capacity than the specified partition size:



→ Cannot continue the setup.

Specify smaller partition size than the capacity of connected hard disk drive, and then retry the setup.

Specified to join the Domain, but the system is installed as Workgroup.

→ When the setup fails to join the Domain during the installation, it will install the system as Workgroup. Open [System] in Control Panel to specify joining the Domain.

Unable to specify the details of Network adapter.

→ In Express Setup, you can not specify the details of Network adapter. Specify them from Control Panel after starting Windows.

Fail to start Parameter File Creator:

❑ Parameter File Creator requires to run by "Microsoft® HTML Application host".

→ If Parameter File Creator does not start, associate the file type with "Microsoft® HTML Application host" via following process.

1) Click [Run] on Start menu.

2) Type "%windir%\system32\mshta.exe /register" in the [Open] box, and click [OK].

Problems with Windows Autorun Menu

Cannot read online document:

- ❑ Do you have Adobe Reader installed correctly in your system?

  → Some online documents are supplied with PDF format. To read the document of PDF format, Adobe Reader is required in your system.

- ❑ Is the operating system Windows XP SP2?

  → With Windows XP SP2, the following information may appear in browser.

  "To help protect your security, Internet Explorer has restricted this file from showing active content that could access your computer. Click here for options..."

  1. Click the Information Bar.
     The shortcut menu appears.
  2. Click [Allow blocked content].
     The security alert dialog box appears.
  3. Click [Yes] on dialog box.

The menu fails to appear:

- ❑ Is your system Windows XP or later, or Windows 2003 or later?

  → The Windows Autorun menu is supported by Windows XP/Windows 2003 or later.

  → If your system runs on Windows Autorun Menu on Windows 2000 system, you need to setup IE6.0 before using Windows Autorun Menu.

- ❑ Is **Shift** pressed?

  → Setting the DVD/CD-ROM with **Shift** pressed down cancels the Autorun feature.

- ❑ Is the system in the proper state?

  → The menu may not appear depending on the system registry setting or the timing to set the DVD/CD-ROM. In such a case, start the Explorer and double-click the icon of the optical disk drive.

Some menu items are grayed-out:

- ❑ Is your system environment correct?

  → The menu items are grayed-out when the logon user does not have the authority of the Administrator or the system does not meet the requirements to install the application. Login with the user having the proper authority on the proper system, and try again.

COLLECTING DR. WATSON DIAGNOSTIC INFORMATION

Dr. Watson collects diagnostic information related to application errors. The location to save the information can be specified as you like. For more information, refer to Chapter 5.

MEMORY DUMP

If an error occurs, the dump file should be saved to acquire necessary information.

If you saved the dump to DAT, write down that it is saved as "NTBackup" or "ARCServe" on the label. You can specify the location to save the diagnostic information as you like.. For more information, refer to "Specifying Memory Dump (Debug Information (refer to Chapter 5 for detail)".

IMPORTANT:

- Consult with your service representative before dumping the memory. Dumping the memory while the server is in the successful operation may affect the system operation.
- Restarting the system due to an error may display a message indicating insufficient virtual memory. Ignore this message and proceed. Restarting the system may result in dumping improper data.

Preparing for Memory Dumping

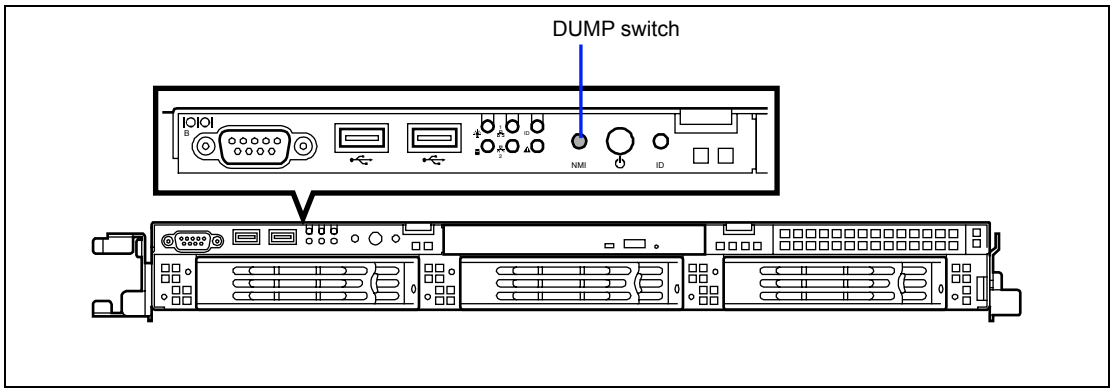
Memory dumping with the DUMP switch may disable the server to restart. In such a case, it is required to force the server to shut down. This forced shutdown, however, is not available if "Enable" is selected for "Power Switch Inhibit" on the Security menu of the BIOS setup utility, SETUP, because this setting disables POWER switch operation.

Follow the procedure below to change the setting to enable the forced shutdown and restart of the server.

1. Power on the server and start the BIOS setup utility, SETUP.
2. Select "Disable" for "Power Switch Inhibit" in the Security menu.
3. Save the configuration data and exit the SETUP.

Saving the Dump File

Press the DUMP switch to save the dump file when an error occurs. Insert a metal pin (a straightened large paper clip will make a substitute) into the switch hole to press the DUMP switch.



Pressing the DUMP switch saves the dump file in the specified directory. (Memory dumping may not be available when the CPU stalls.)

IMPORTANT: Do not use a toothpick or plastic stick that is easy to break.

RECOVERY FOR WINDOWS SERVER 2003 X64 EDITIONS AND WINDOWS SERVER 2003

If the system fails to start by some reasons, recover the system with the recovery console. However, recovery using this method should be performed only by system administrator or a user who has an expert knowledge.

See Online Help for details.

Maintenance Tools

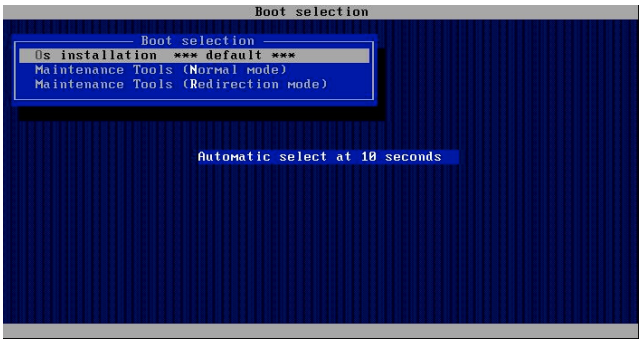
The Maintenance Tools is a tool of this product prevention to maintain, and to analyze the trouble.

Starting Maintenance Tools

The Maintenance Tools is started according to the following procedure.

1. Turn on peripheral devices and the server in this order.
2. Insert the NEC EXPRESSBUILDER DVD supplied with your server into the optical disk drive of your server.
3. Press **Ctrl**, **Alt**, and **Delete** to reboot the server from the NEC EXPRESSBUILDER. (You may also turn off and then on again to reboot the server.)

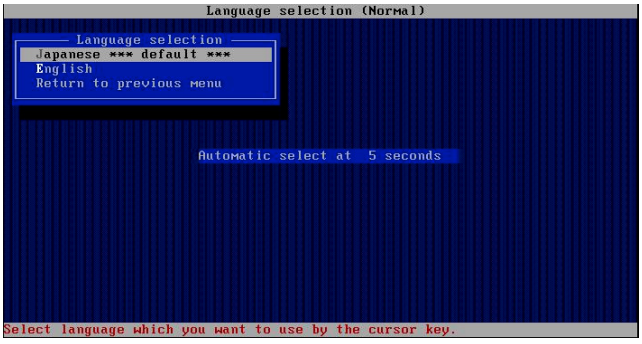
   System boots up displaying Boot Selection menu.



IMPORTANT: An initial selection of the menu is "Os installation". "Os installation" starts by the automatic after the Boot Selection menu is displayed.

4. When a local console is used, "Maintenance Tools (Normal mode)" is selected.

   Moreover, "Maintenance Tools (Redirection mode)" is selected when using it with remote console.

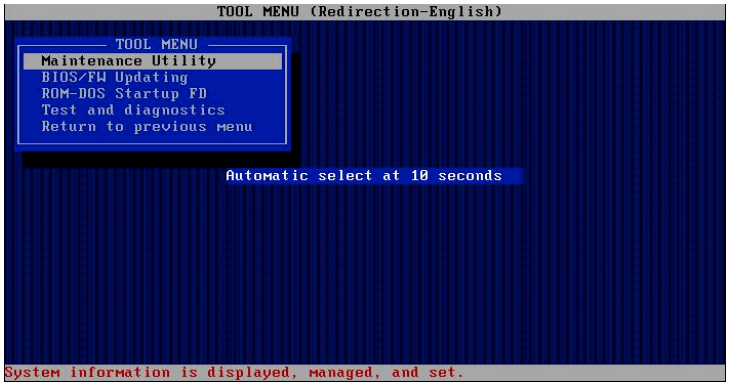


IMPORTANT: An initial selection of the menu is "Japanese". "Japanese" starts by the automatic operation when the operation is not done for five seconds after the Language Selection menu is displayed.

5. "English" is selected.

The tool menu is displayed.

When you use a local console



When you use a remote console

6. Each tool is selected, and it starts.

Function of Maintenance Tools

The following functions can be executed in the Maintenance Tools.

- Maintenance Utility

  The Off-line Maintenance Utility is started in Maintenance Utility. The Off-line Maintenance Utility is an OS-independent maintenance program. When you are unable to start the OS-dependent NEC ESMPRO to troubleshoot a problem, the Off-line Maintenance Utility can be used.

  IMPORTANT:

  - The Off-line Maintenance Utility is intended for use of your service representative. The NEC EXPRESSBUILDER DVD you have created contain a file that describes operation of the utility, but do not attempt to use the utility by yourself. Contact your service representative and follow instructions.
  - See the on-line help for details of the Off-line Maintenance Utility. For further information, ask your service representative.

  The Off-line Maintenance Utility provides the following features.

  – IPMI Information Viewer

    Provides the functions to view the system event log (SEL), sensor data record (SDR), and filed replaceable unit (FRU) and to make a backup copy of them.

    Using this feature, you can find system errors and events to determine a maintenance part.

  – BIOS Setup Viewer

    Provides the functions to export the current configuration data defined with the SETUP utility to a text file.

  – System Information Viewer

    Provides the functions to view information on the processor and the BIOS and export it to a text file.

  – System Information Management

    Provides the function to make a back-up copy of your data.

    Without the backup data, the system-specific information and/or configuration may not be restored.

    Only the authorized personnel is allowed to restore the backup data.

  – System Management

    The parameters of BMC (Baseboard Management Controller) are set for remote control and alert.

- BIOS/FW Updating

  This menu allows you to update the software module such as BIOS and firmware of the server by using the update disk (3.5-inch floppy disk) that is distributed from NEC customer service representative.

  After rebooting the system, an update program is started automatically from floppy disk, and the various BIOS and firmware programs are updated.

  IMPORTANT: Do not turn off the server while the update program is running. If the update processing is discontinued, the system becomes unable to start.

- ROM-DOS startup FD

  Creates a support disk for starting the ROM-DOS system.

- Test and diagnostics

  Execute various tests on the server system to check if the server functions are normal and if the connection between the server and additional board is normal.

  After the Test and diagnostics is executed, a system check program assigned to each model starts. See Chapter 7 for details.

Maintenance Tools with Remote Console

This subsection describes the procedures for using Maintenance Tools with remote console.

Maintenance Tools contains the remote console feature that allows the system administrator to set up the server from the management workstation (management PC) via the network or the server's COM B (serial) port.

IMPORTANT:

- Do not use this feature on any other computer than the server, or on any other server obtained without the NEC EXPRESSBUILDER. Doing so may cause a failure of the server.
- Select "Maintenance Tools (Redirection mode)" for the remote console in the "Boot Selection" menu. Even if the rest is selected, it does not display it in management PC.
- The system may fail to operate with the transfer rate of 115.2 Kbps for serial console redirection. Specify any other transfer rate than 115.2 Kbps.

Starting

The following two methods are available to start the server.

- Running Maintenance Tools from the management PC via LAN
- Running Maintenance Tools from the management PC via direct connection (COM2)

For the procedure for starting Maintenance Tools with Remote Console, see "NEC DianaScope".

IMPORTANT: Do not change the boot device order in BOOT menu in BIOS SETUP. NEC EXPRESSBUILDER cannot be used if the optical disk drive is not the first device to launch the system.

NOTE: The following items of BIOS setup information will be set as shown below.

- LAN Controller: [Enabled]
- Serial Port A: [Enabled]
  Base I/O Address: [3F8]
  Interrupt: [IRQ 4]
- Serial Port B: [Enabled]
  Base I/O Address: [2F8]
  Interrupt: [IRQ 3]
- BIOS Redirection Port: [Serial Port B]
- Baud Rate: [19.2K]
- Flow Control: [CTS/RTS]
- Console Type: [PC ANSI]

RESETTING THE SERVER

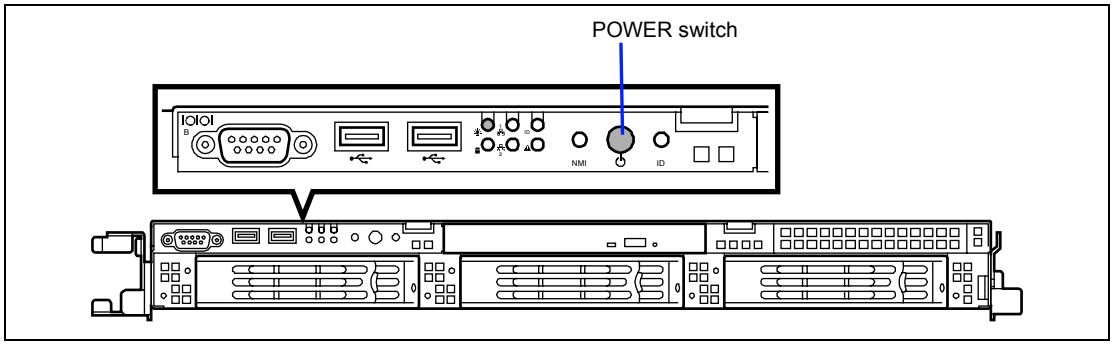
If the server halts before starting the OS, press and hold **Ctrl** and **Alt** and press **Delete**. This restarts the server.

> **IMPORTANT:** Resetting the server clears the DIMM memory and the data in process. To reset the server when it is not frozen, make sure that no processing is in progress.

FORCED SHUTDOWN

Use this function when an OS command does not shut down the server, the POWER switch does not turn off the server, or resetting does not work.

Press and hold the POWER switch on the server for at least four seconds. The power is forcibly turned off. To turn on the power back again, wait approximately 30 seconds after turning off the power (forced shutdown).



> **IMPORTANT:** If the remote power-on function is used, cycle the power once to load the OS, and turn off the power again in the normal way.

Chapter 9

Upgrading Your Server

This chapter describes internal optional devices available for the server, procedures for install or removing such optional devices, and notes on using them.

IMPORTANT:

- Optional devices described in this chapter may be installed or removed by any user. However, NEC does not assume any liability for damage to optional devices or the server or malfunctions of the server resulted from installation by the user. NEC recommends you ask your service representative for install or removing any optional devices.
- Make sure to use only optional devices and cables authorized by NEC. Repair of the server due to malfunctions, failures, or damage resulted from installing such devices or cables will be charged.
- For the Windows Server operating system user:
  When you made any change to the hardware configuration, make sure to update the system (see Chapter 5 for details.).

SAFETY NOTES

Observe the following notes to install or remove optional devices safely and properly.

⚠ WARNING

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.

- Do not disassemble, repair, or alter the server.
- Do not remove the lithium battery.
- Disconnect the power plug before working with the server.

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.

- Do not lift the server only by a single person.
- Make sure to complete board installation.
- Do not install the server on the rack leaving the cover removed.
- Do not install the server on the rack halfway.
- Do not pinch your fingers with mechanical component.
- Avoid installation in extreme temperature conditions.

ANTI-STATIC MEASURES

The server contains electronic components sensitive to static electricity. Avoid failures caused by static electricity when installing or removing any optional devices.

- Wear a wrist strap (an arm belt or anti-static glove).

  Wear a wrist strap on your wrist. If no wrist strap is available, touch an unpainted metal part of the cabinet before touching a component to discharge static electricity from your body.

  Touch a metal part regularly when working with components to discharge static electricity.

- Select a suitable work space.
  - Work with the server on the anti-static or concrete floor.
  - When you work with the server on a carpet where static electricity is likely to be generated, make sure take anti-static measures beforehand.
- Use a work table.

  Place the server on an anti-static mat to work with it.

- Cloth
  - Do not wear a wool or synthetic cloth to work with the server.
  - Wear anti-static shoes to work with the server.
  - Take off any jewels (a ring, bracelet, or wrist watch) before working with the server.
- Handling of components
  - Keep any component in an anti-static bag until you actually install it to the server.
  - Hold any component by its edge to avoid touching any terminals or parts.
  - To store or carry any component, place it in an anti-static bag.

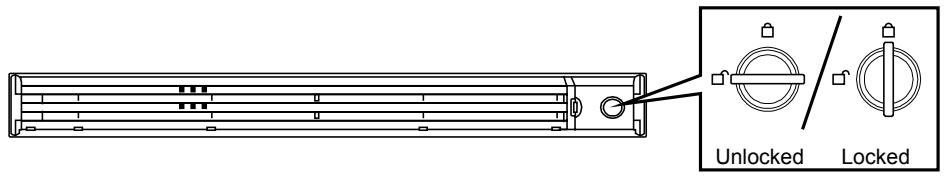
PREPARING FOR INSTALLATION AND REMOVAL

Follow the procedure below to prepare for installing or removing components.

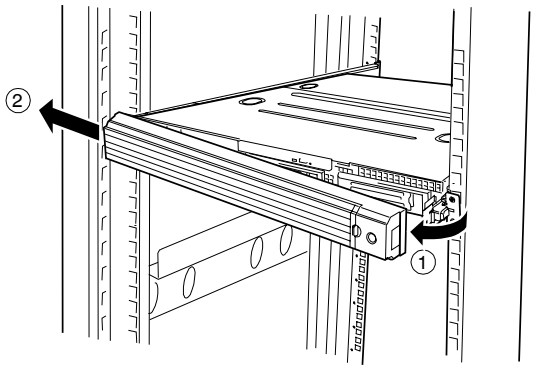
1. Shutdown the OS.

   Shutdown process is not required if the hard disk drives and the additional power supply units are hot-swappable.

2. Unlock the front bezel with the security key.



3. Remove the front bezel from the chassis.



4. Press the POWER switch to power off the server (the POWER LED goes off).
5. Remove all cables and power cords from the server.

   Prepare a Phillips screwdriver to install or remove the component.

The server needs to be pulled out from the rack for installing/removing any internal components other than the hard disk drives and power supply units (redundant power supply model only).

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-12 for details.

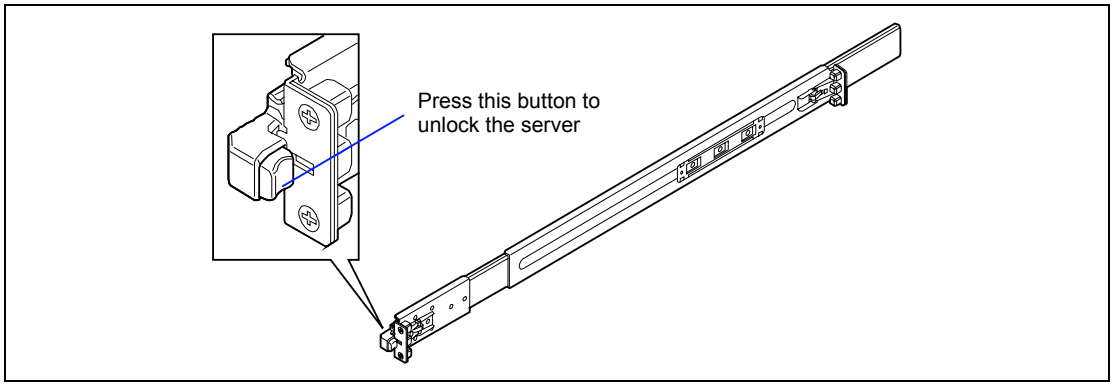
- Do not install the server on a rack with leaving covers removed.
- Do not pinch your finger with mechanical components.
- Note high temperature.
- Do not pull out a device from the rack if the rack is unstable.
- Do not leave more than one device being pulled out from the rack.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.

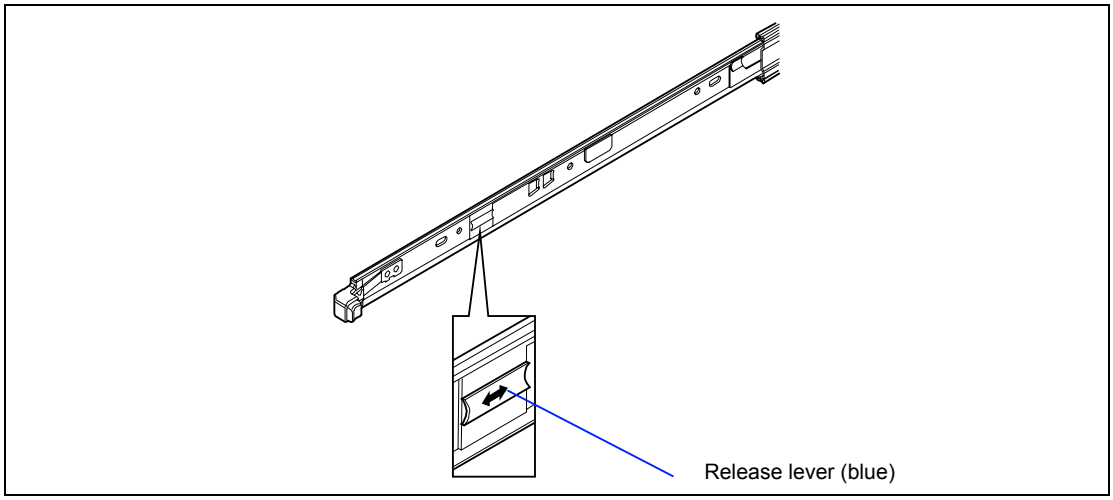
> **NOTE:** To confirm the device you are going to maintain, use the UID switch and the UID LED that goes on when the switch is pressed.

2. Loosen the unlock buttons at the right and left sides of the front panel, and slowly pull out the server from the rack.

   The server is locked while you are pulling it. Stop pulling when it is locked.



To place the server in the rack, push it back into the rack while pushing the right and left release levers (blue) forward or rearward.



> **IMPORTANT:** Be very careful not to get your finger caught in the levers or rails.

HARD DISK DRIVE

The hard disk drive bay at the front of the server chassis may contain hard disk drives of approximately 25.4 mm (1 inch) high.

The disk interface, number and size of hard disk drives depend on server model, as described below. The IDs of hard disk drive (channel numbers or port numbers) are also predefined.

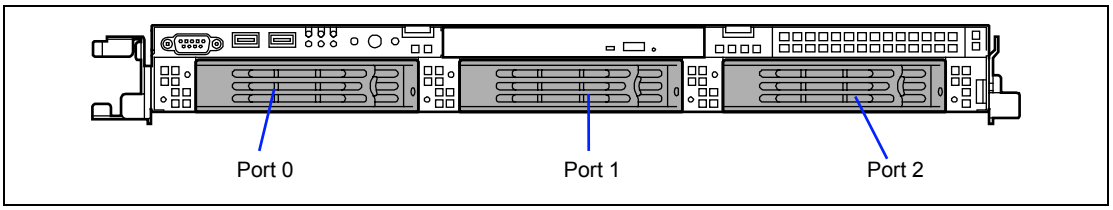
3.5-inch Disk Model

SATA hard disk drive

The Onboard RAID Controller (LSI Embedded MegaRAID) or optional RAID Controller (N8103-116/117) supports serial ATA (SATA) interface. Up to three hard disk drives (mounted on the dedicated 3.5-inch width tray) can be installed.

IMPORTANT: Use the hard disk drives authorized by NEC. Installing a third-party hard disk drive may cause a failure of the server as well as the hard disk drive. Purchase hard disk drives of the following models:

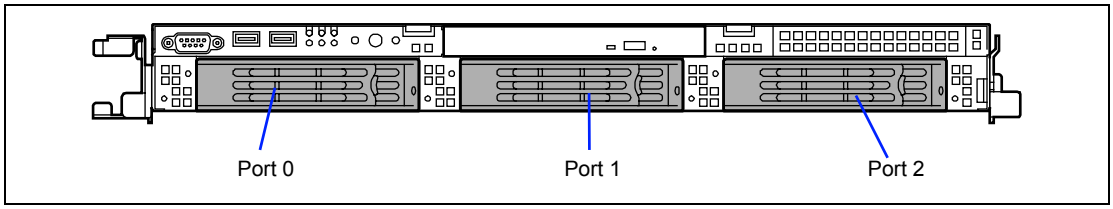
- N8150-207A (80GB, 7,200 rpm, serial ATA2/300)
- N8150-208A (160GB, 7,200 rpm, serial ATA2/300)
- N8150-209A (250GB, 7,200 rpm, serial ATA2/300)
- N8150-229 (500GB, 7,200 rpm, SATA2/300)
- N8150-237 (750GB, 7,200 rpm, SATA2/300)



SAS hard disk drive

Can be used only when the optional RAID Controller (N8103-116/117) is installed. Up to three hard disk drives (mounted on the dedicated 3.5-inch width tray) can be installed.

IMPORTANT: Use the hard disk drives authorized by NEC. Installing a third-party hard disk drive may cause a failure of the server as well as the hard disk drive. Purchase hard disk drives of the following models:
- N8150-199 (36.3GB, 15000 rpm, SAS)
- N8150-200 (73.2GB, 15000 rpm, SAS)
- N8150-201 (146.5GB, 15000 rpm, SAS)
- N8150-226 (300GB, 15000 rpm, SAS)



The hard disk drive bays are connected to the Mini SAS connector on the mother board.
To use the hard disk drives in a RAID System, refer to:

- When using the Onboard RAID Controller (LSI Embedded MegaRAID):

  Use LSI Software RAID Configuration Utility or Universal RAID Utility to build, configure, and manage the RAID System.

  See "RAID System Configuration" in Chapter 4 and "Universal RAID Utility" in Chapter 6.

- When using an optional RAID Controller (N8103-116/117):

  Use WebBIOS or Universal RAID Utility to build, configure, and manage the RAID System.

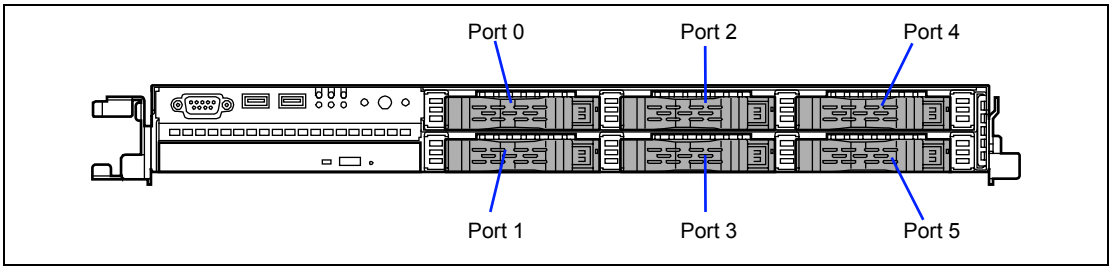
  Refer to the manual coming with the optional RAID Controller, or see "Universal RAID Utility" in Chapter 6.

2.5-inch Disk Model

The Internal RAID Controller (equivalent to N8103-116) supports SAS interface. Up to six hard disk drives (mounted on the dedicated 2.5-inch width tray) can be installed.

IMPORTANT: Use the hard disk drives authorized by NEC. Installing a third-party hard disk drive may cause a failure of the server as well as the hard disk drive. Purchase hard disk drives of the following models:

- N8150-219 (36.3GB, 10000 rpm, SAS)
- N8150-220 (73.2GB, 10000 rpm, SAS)
- N8150-228 (146.5GB, 10000 rpm, SAS)
- N8150-240 (36.3GB, 15000 rpm, SAS)
- N8150-241 (73.2GB, 15000 rpm, SAS)



The hard disk drive bays are connected to the Internal RAID Controller (equivalent to N8103-116).

- When using the Internal RAID Controller (equivalent to N8103-116):

  Use WebBIOS or Universal RAID Utility to build, configure, and manage the RAID System.

  See "RAID System Configuration" in Chapter 4 and "Universal RAID Utility" in Chapter 6.

A dummy tray is installed in the hard disk drive bays except for Port 0. The purpose of a dummy tray is to increase the cooling effect in the server. Install a dummy tray in slots not containing a hard disk drive.

Installation

Take the following steps to install a hard disk drive. This procedure applies to all the hard disk drive bays. See the next section for the procedure installing a hard disk drive in the flex bay.

NOTE: Any hard disk drive can be installed or removed in or from the server only by removing the front bezel.

IMPORTANT:

- In the RAID System, use the hard disk drives having the same specification including the capacity.
- Do not press the POWER switch during the installation or removal of the hard disk drive if your server is running.

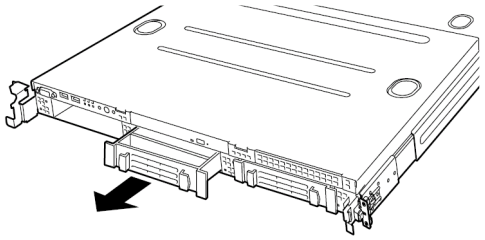
3.5-inch Hard Disk Drive

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Unlock the front bezel with the security key and remove the front bezel.
3. Locate the slot in which you are going to install a hard disk drive.

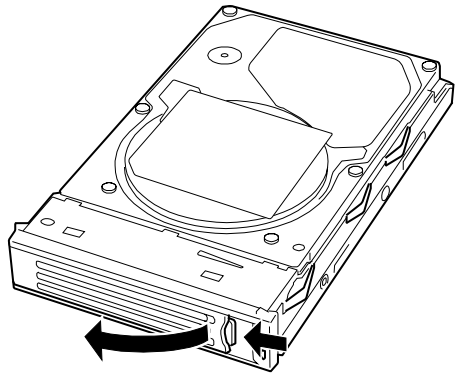
   The server has three slots. Install the hard disk drives from the left vacant slot.
4. Remove the dummy tray.

IMPORTANT:

- Keep the dummy tray for future use.
- The purpose of a dummy tray is to increase the cooling effect in the server. Install a dummy tray in slots not containing a hard disk drive.



5. Unlock the hard disk drive handle.

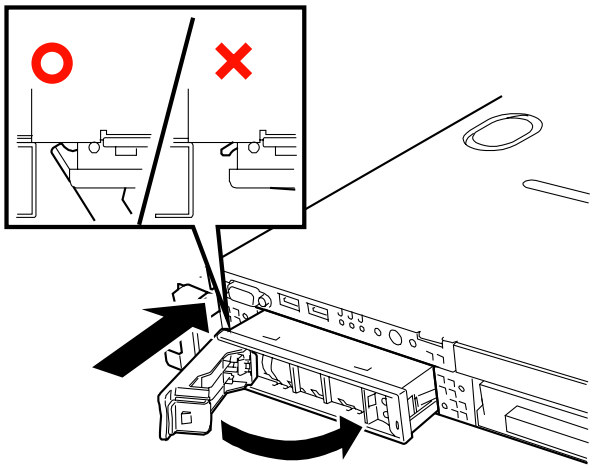


6. With the handle in the fully open position, firmly hold the drive carrier and handle, and insert it into the chassis.

IMPORTANT:

- Do not push on the handle until the handle begins to close by itself.
- Carefully hold the hard disk drive with both hands.
- Do not press the POWER switch during the installation or removal of the hard disk drive if your server is running.

NOTE: Confirm that the handle is hooked to the frame when having inserted the hard disk drive.



7. When the handle begins to close by itself , slowly close the handle.

   The drive carrier is locked when a "click" is heard.

   IMPORTANT:

   - Be careful not to get your finger caught between the handle and tray.
   - Push the drive further to check if it is firmly secured.

8. Power on the server, and run SETUP utility.

   Select [Boot] menu to set the boot priority. When you have installed hard disk drive additionally, the boot priority stored in BIOS is cleared. See Chapter 4 for details.

9. Install the front bezel you removed in step 2.

   There are tabs on the left side of the front bezel. Engage the tabs with the server frame, install the front bezel, and lock it with the security key.

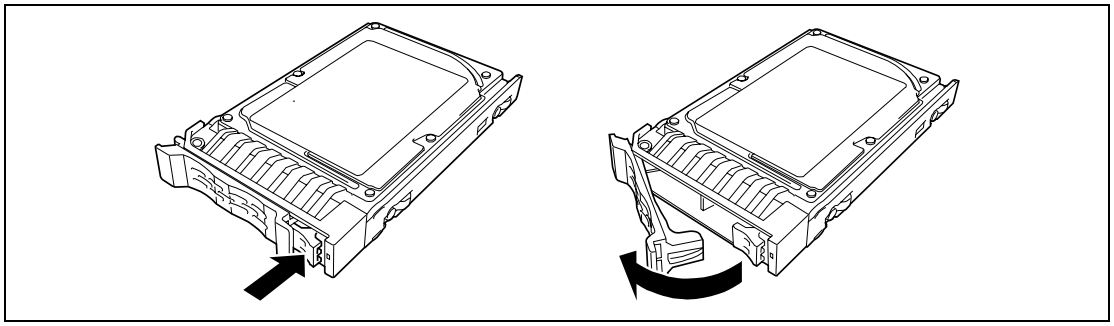
2.5-inch Hard Disk Drive

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Unlock the front bezel with the security key and remove the front bezel.
3. Locate the slot in which you are going to install a hard disk drive.

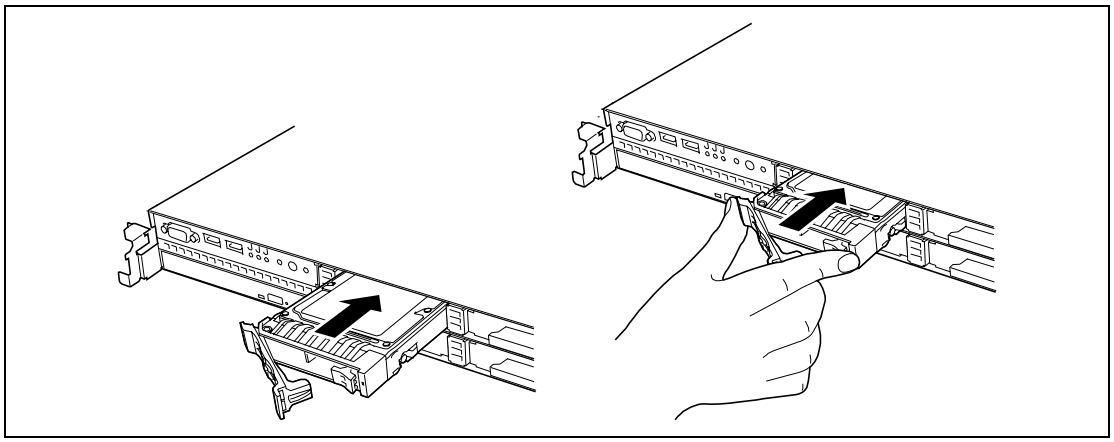
   The server has six slots. Fill the vacant slots with hard disk drives from the lower port number.
4. Remove the dummy tray or drive carrier if installed.

   IMPORTANT:

   - Keep the dummy tray for future use.
   - The purpose of a dummy tray is to increase the cooling effect in the server. Install a dummy tray in slots not containing a hard disk drive.
5. Unlock the hard disk drive handle.



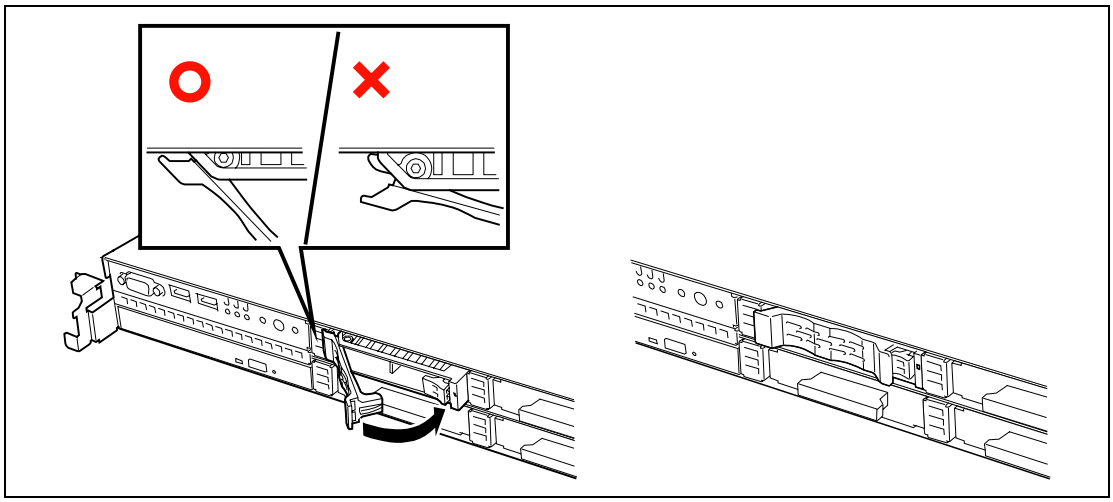
6. With the handle in the fully open position, firmly hold the drive carrier and handle, and insert it into the chassis.



IMPORTANT:

- Do not push on the handle until the handle begins to close by itself.
- Carefully hold the hard disk drive with both hands.
- Do not press the POWER switch during the installation or removal of the hard disk drive if your server is running.

NOTE: Confirm that the handle is hooked to the frame when having inserted the hard disk drive.



7. When the handle begins to close by itself , slowly close the handle.

   The drive carrier is locked when a "click" is heard.

   IMPORTANT:

   - Be careful not to get your finger caught between the handle and tray.
   - Push the drive further to check if it is firmly secured.

8. Power on the server, and run SETUP utility.

   Select [Boot] menu to set the boot priority. When you have installed hard disk drive additionally, the boot priority stored in BIOS is cleared. See Chapter 4 for details.

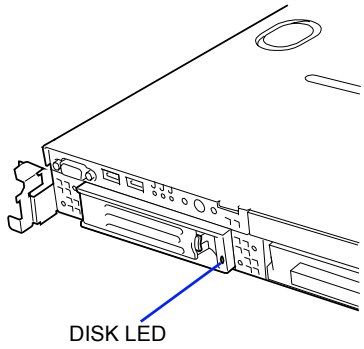
9. Install the front bezel you removed in step 2.

   There are tabs on the left side of the front bezel. Engage the tabs with the server frame, install the front bezel, and lock it with the security key.

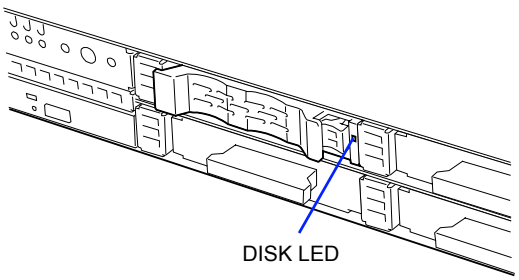
Removal

Take the following steps to remove a hard disk drive:

NOTE: If removing a failing hard disk drive, confirm the slot in which the DISK LED of the hard disk drive is amber before starting the removal.



3.5-inch hard disk drive

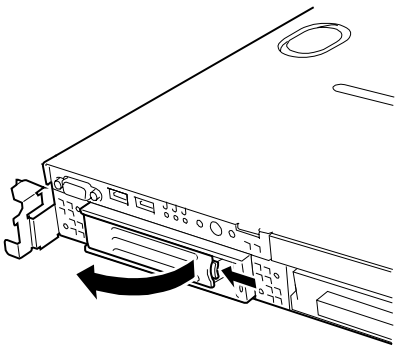


2.5-inch hard disk drive

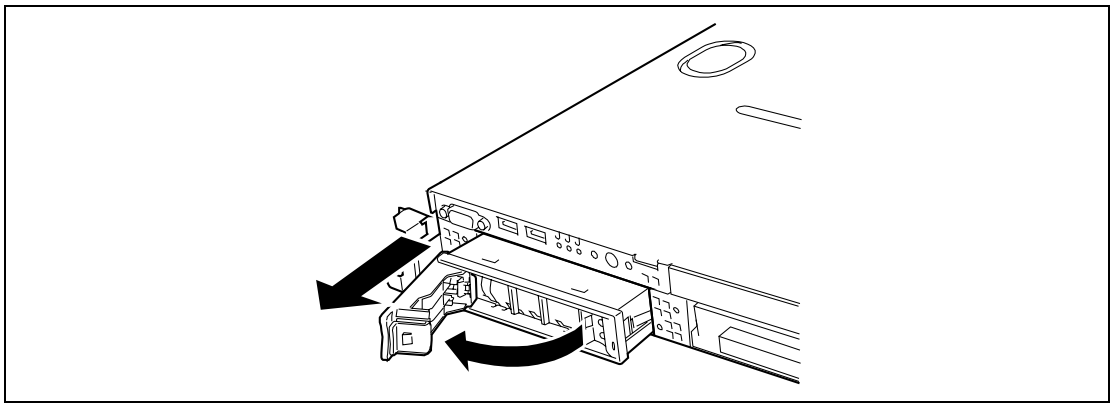
3.5-inch Hard Disk Drive

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Unlock the front bezel with the security key, and remove the front bezel.
3. Push the lever to unlock, and open the handle.

IMPORTANT: Do not press the POWER switch during the installation or removal of the hard disk drive if your server is running.



4. Firmly hold the handle and hard disk drive, and pull out the hard disk drive.
5. If using the server with the hard disk drive removed, install the dummy tray in the vacant slot to ensure the cooling efficiency.

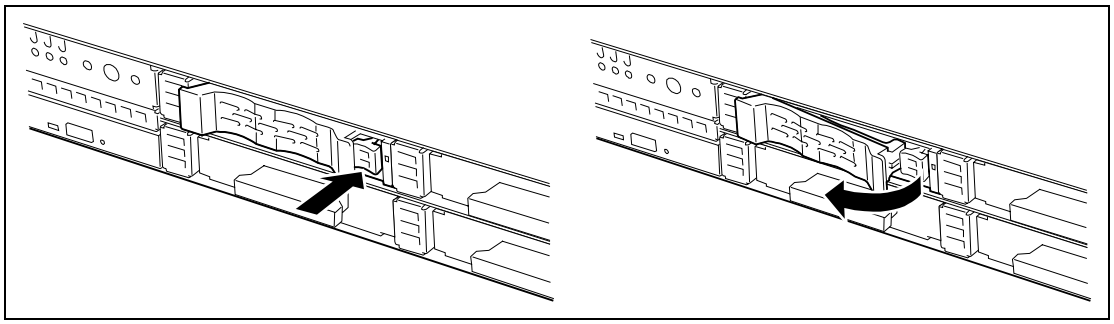


6. Install the front bezel you removed in step 2.

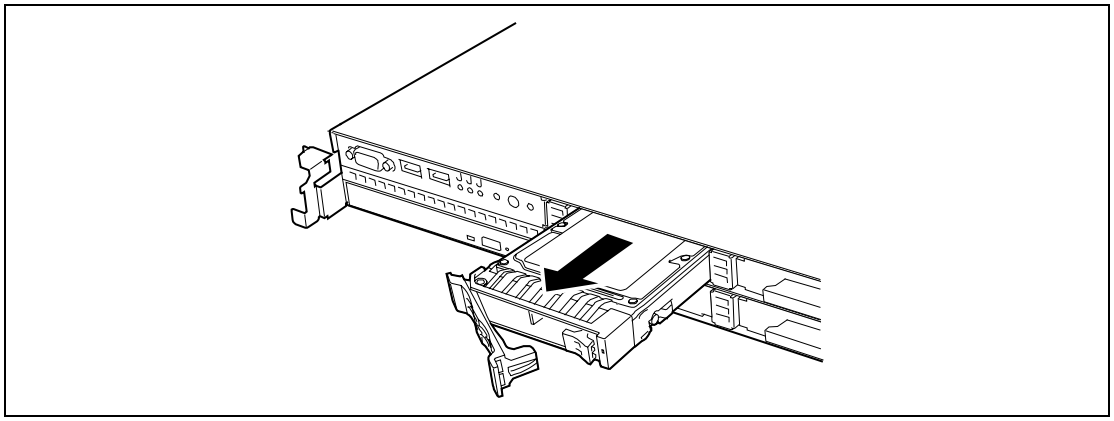
2.5-inch Hard Disk Drive

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Unlock the front bezel with the security key, and remove the front bezel.
3. Push the lever to unlock, and open the handle.

IMPORTANT: Do not press the POWER switch during the installation or removal of the hard disk drive if your server is running.



4. Firmly hold the handle and hard disk drive, and pull out the hard disk drive.
5. If using the server with the hard disk drive removed, install the dummy tray in the vacant slot to ensure the cooling efficiency.



6. Install the front bezel you removed in step 2.

Notes on Replacing Hard Disk Drives in the RAID System

When the hard disk drives are in the RAID System, you can restore the state before an error using the auto-rebuild feature that stores the data in the old hard disk drive into a new one.

The auto-rebuild feature is available for the RAID1, RAID5, or RAID6.

Auto-rebuild is carried out when you hot-swap a failed hard disk drive with a new one (replace the disk while the server is powered). While auto-rebuild is in progress, the DISK LED flashes green and amber alternatively to indicate it.

IMPORTANT:

- When auto-rebuild fails, the DISK LED lights in amber. Remove and install the hard disk drive again to restart auto-rebuild.
- If the RAID System management utility is installed, it may display or act as follows. If the DISK LED does not light in amber after auto-rebuild, however, auto-rebuild has completed successfully.
  - Displays "Rebuild was cancelled" on the screen while auto-rebuild is in progress.
  - Appears to stop and restart auto-rebuild.

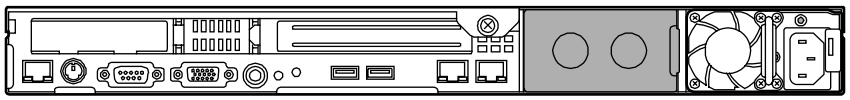
Observe the following notes for auto-rebuild.

- Do not power off the server in the period between a hard disk drive error and completion of auto-rebuild.
- When you removed a hard disk drive, wait at least 90 seconds before installing the hard disk drive back again.
- Do not replace another hard disk drive while rebuilding is in progress. (The DISK LED flashes in green and amber alternatively while rebuilding the hard disk drive.)

POWER SUPPLY UNIT (REDUNDANT POWER SUPPLY MODEL)

Your server contains one or two power supplies.

The second power supply is optional and provides a redundant configuration that ensures continued operation of the system in the unlikely event one of the power supplies fails.



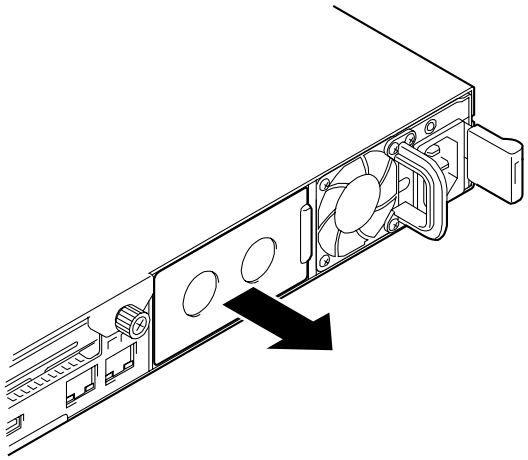
Installation

Take the following steps to install a power supply unit:

1. See the section "Preparing for Installation and Removal" described earlier to prepare.

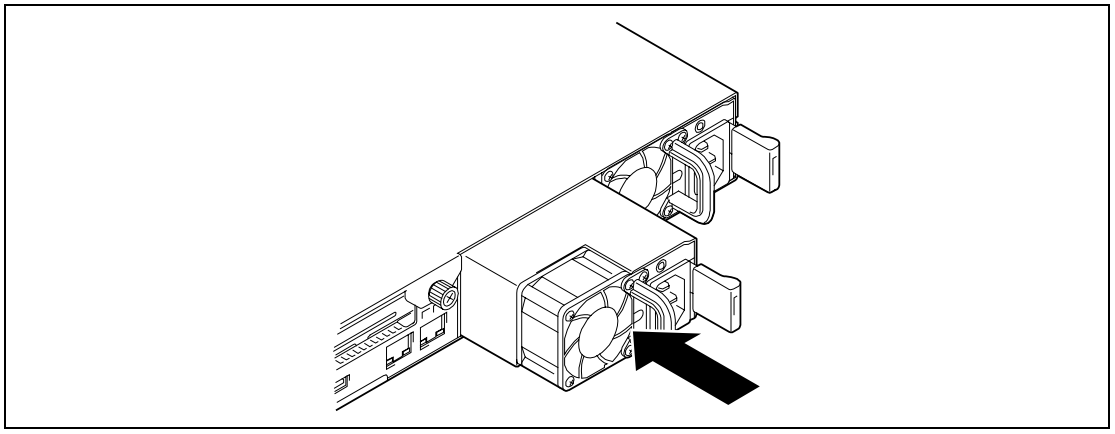
   IMPORTANT: Be sure to turn off the power. Failure to do so causes the server to malfunction or fail.

2. Pull the cable arm toward the rear of the server, and confirm the slot for installing an optional power supply unit.
3. Hold and pull the lever of the blank cover and remove the blank cover.

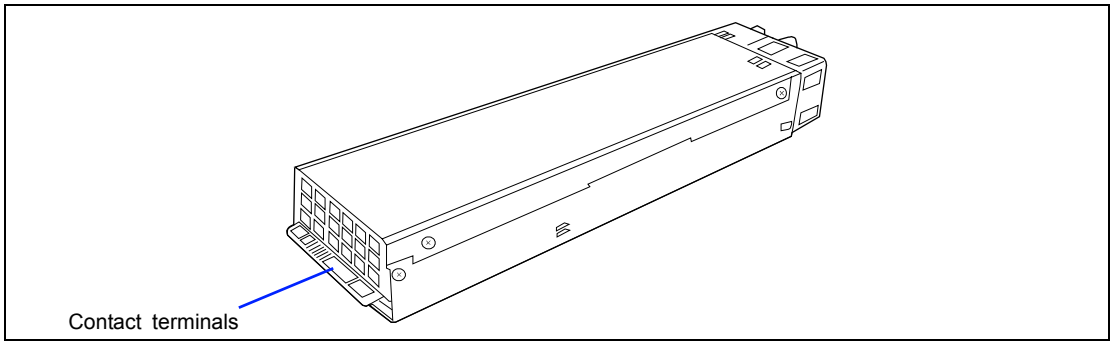


IMPORTANT: Keep the removed blank cover for future use.

4. Insert the power supply unit.

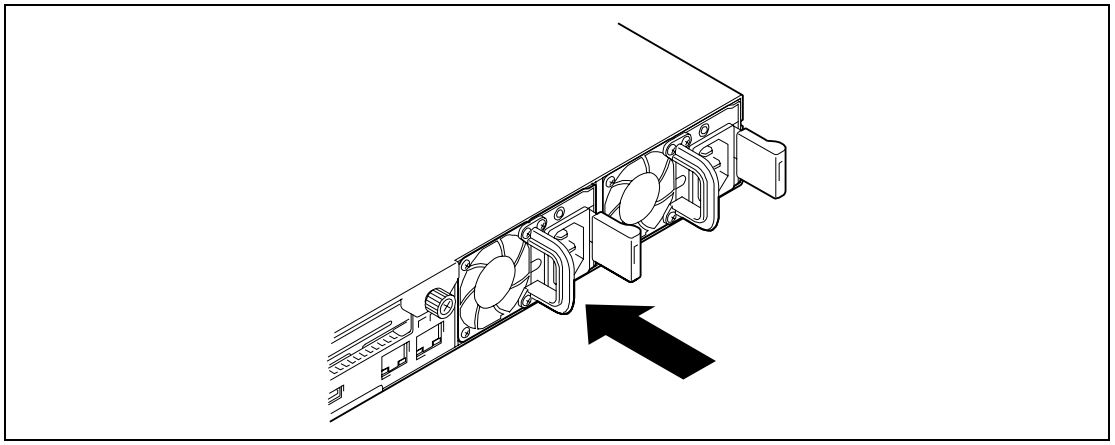


IMPORTANT: Do not touch the terminals of the power supply unit.



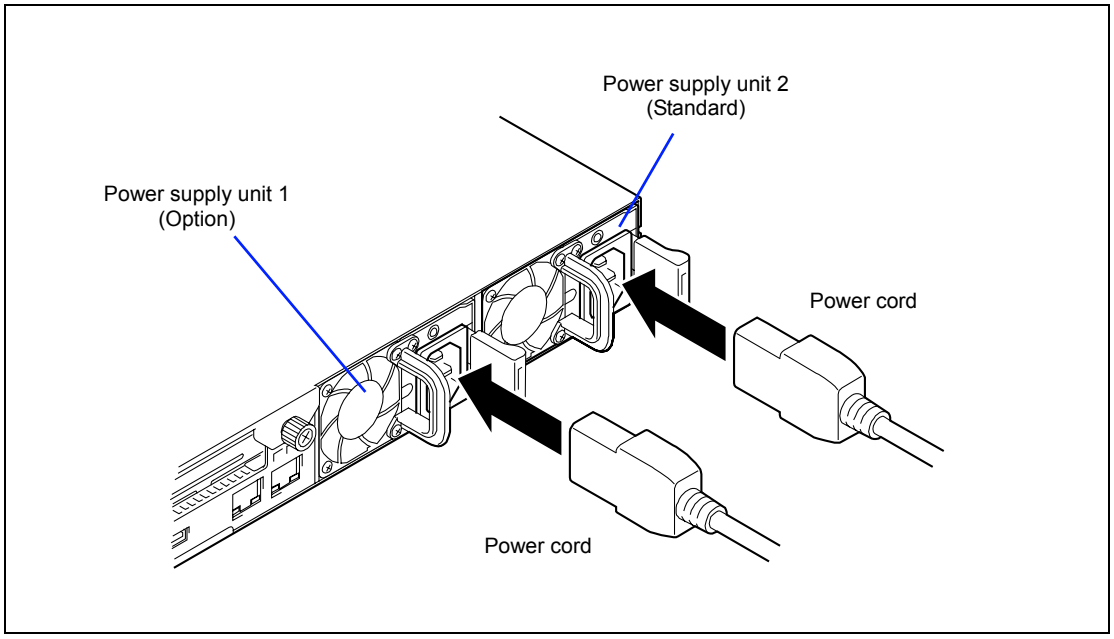
5. Grasp the handle and firmly push the power supply.

The power supply unit is locked when a distinct "click" is heard.



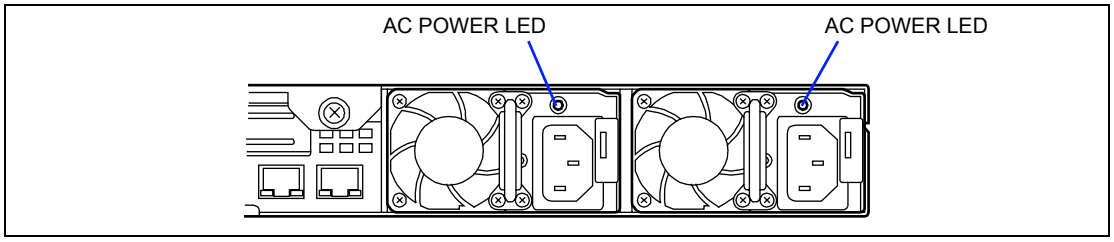
6. Connect two power cords.

Use the power cord provided with the standard power supply unit and the one provided with the system. The AC POWER LEDs flash when the power cords are connected.



7. Power on the server.

The AC POWER LEDs go on.



8. Confirm, by the STATUS LED or on the POST screen, that there are no errors related to the power supply units.

See Chapter 8 for details on the error messages.

If the AC POWER LEDs are off, reinstall the power supply units. If the same error message still appears, contact your sales representative.

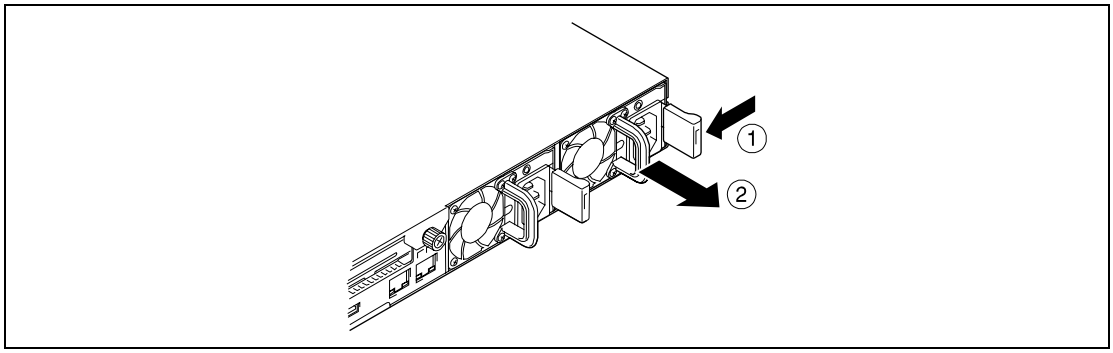
Replacing a Failing Power Supply Unit

Replace only a failing power supply unit.

> **IMPORTANT:** Do not remove a power supply unit operating normally.

> **NOTE:** If one power supply unit fails while the server contains two power supply units in a redundant configuration, the failing power supply unit can be replaced with the system operating (power-on state). (Skip step 2.)

1. Locate the failing power supply unit by the AC POWER LED on the rear of each power supply unit. (The LED of the failing power supply unit is amber.)
2. Shutdown the system, and press the POWER switch to turn off the power.
3. Disconnect the power cord from the failed power supply.
4. Hold the handle of the failing power supply.
5. While pressing the lever, pull the power supply to remove if from the chassis.



6. If operating the server with a single power supply unit without installing a new one, install the cover you removed in step 3 of installation procedure.

> **IMPORTANT:** To maintain the cooling effect in the server, install the blank cover in the vacant slot.

7. Install the new power supply unit taking steps 4 to 8 of "Installation", and confirm that the power supply unit is installed normally.

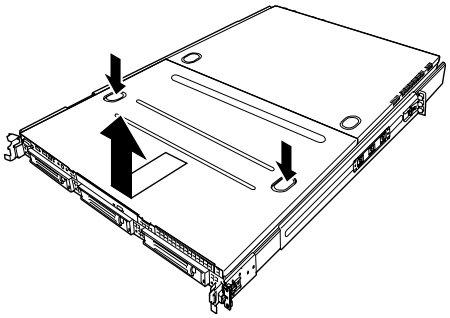
> **NOTE:** If one of the two power supply units of the server is replaced while the power is on, the POWER LED of the new power supply unit goes on. (If it is replaced while the power is off, the LED flashes. The LED goes on when the power is turned on.)

DRIVE COVER

Open the drive cover when installing/removing a fan assembly, processor, and backup file device or reconnecting an internal cable.

Removal

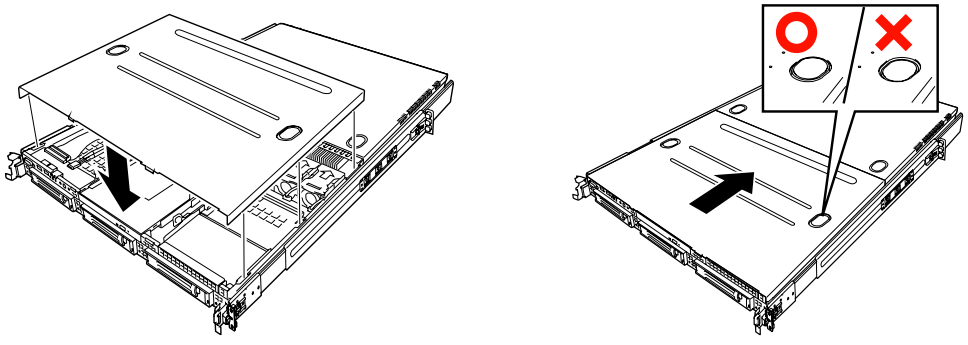
1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Slide the drive cover toward the rear of the server while pressing the lock button on the cover.
4. Lift off the drive cover from the server.



Installation

When installing the drive cover, confirm that the tab of the cover is securely inserted into the slot in the server frame. Slide the drive cover toward the rear of the server. The drive cover is locked when a distinct "click" is heard. At this time, check the release button for normal state.

NOTE: The system must be operated with the drive cover installed to ensure proper cooling.

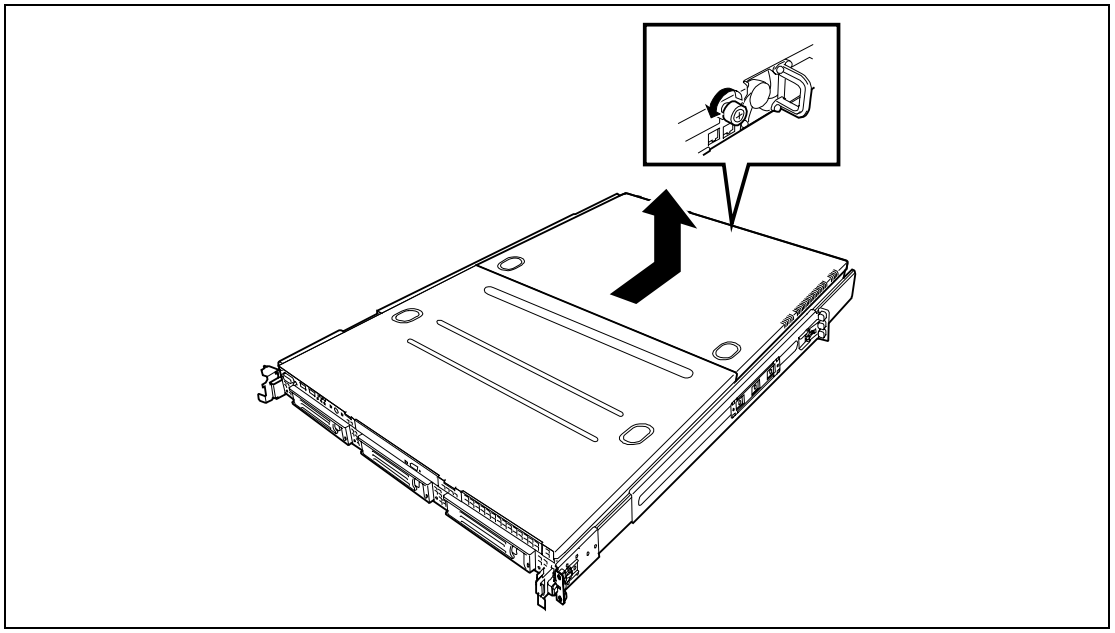


LOGIC COVER

Open the logic cover when installing/removing a DIMM, processor, and PCI add-in card or reconnecting an internal cable.

Removal

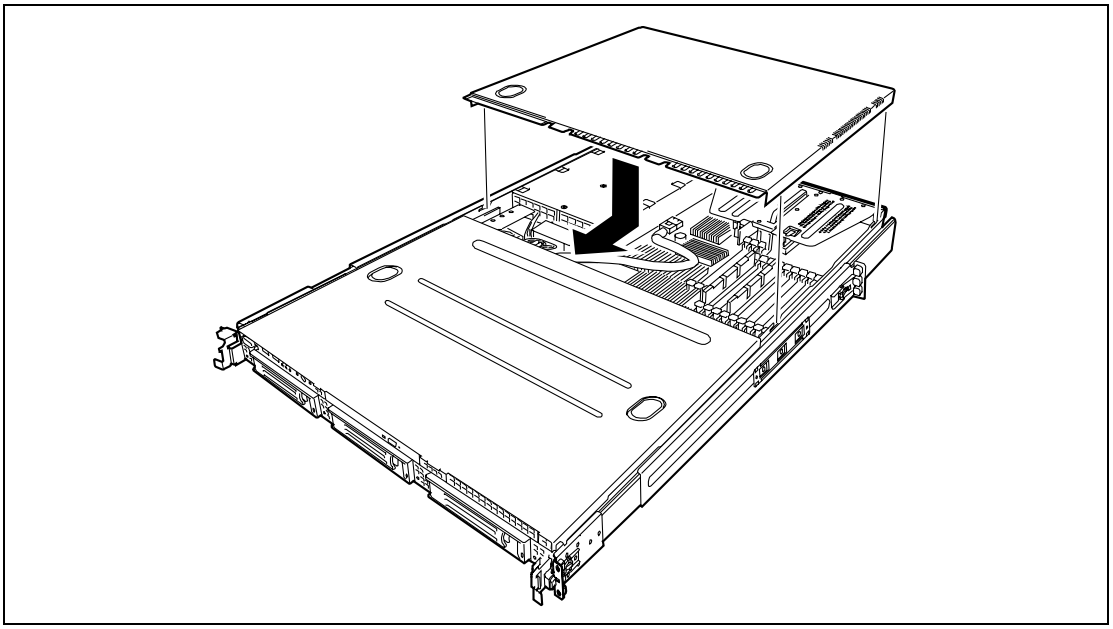
1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Loosen a captive thumbscrew at the rear of the server.
4. Slide the logic cover toward the rear of the server and lift off the cover from the server.



Installation

When installing the logic cover, confirm that the tab of the cover is securely inserted into the slot in the server frame.

Slide the logic cover toward the rear of the server and secure the cover with captive thumbscrew.



NOTE: If the logic cover cannot be closed firmly, remove the drive cover before installing the logic cover.

DIMM

Install the additional DIMM (Dual Inline Memory Module) to the DIMM socket on the mother board in the server. The mother board is provided with 12 DIMM board slots.

NOTE: Up to 48GB of memory (4GB DIMM × 12) can be installed. (The factory-installed DIMMs need to be replaced in this case.) Two DIMMs of 1GB are factory-installed in DIMM slots #11 and #21.

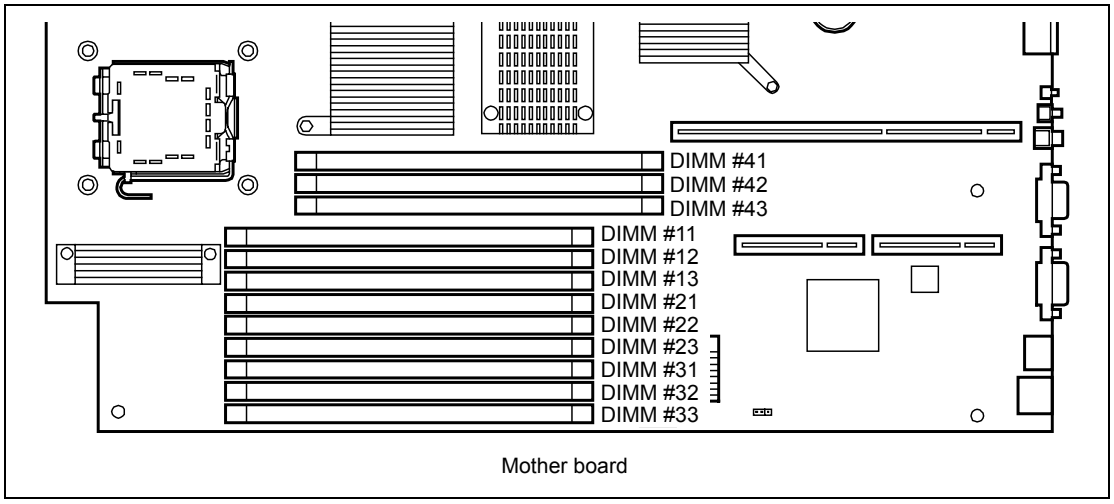
IMPORTANT:

- The DIMM is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the DIMM. Do not touch the DIMM terminals or on-board parts by a bare hand or place the DIMM directly on the desk. For static notes, see the section "Anti-static Measures" described earlier.
- Make sure to use the DIMM authorized by NEC. Installing a third-party DIMM may cause a failure of the DIMM as well as the server. Repair of the server due to failures or damage resulted from installing such a board will be charged.

Installation Order

DIMMs must be populated in pairs and in the following order:

Group #1, #2, #3, #4, #5, then #6.



Order	Group	Socket No.
1	1	#11 and #21
2	2	#31 and #41
3	3	#12 and #22
4	4	#32 and #42
5	5	#13 and #23
6	6	#33 and #43

IMPORTANT: Install a matched pair of DIMMS equal in speed and size.

NOTE: Refer to "Using the Memory RAS Features" for configuring the memory mirroring and online spare memory features.

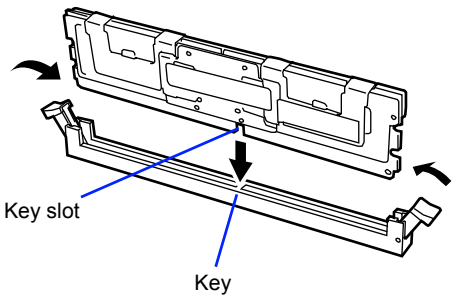
Installation

Install a DIMM in the following procedure.

> **IMPORTANT:** The server supports DIMMs of only the low-profile type (30 mm (1.2 inches) in height). It does not support DIMMs exceeding the specified height.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the logic cover.
4. Locate the DIMM socket which you are going to install DIMM.
5. Make sure the clips at either end of the DIMM socket(s) are pushed outward to the open position.
6. Holding the DIMM by the edges, remove it from its anti-static package.
7. Position the DIMM above the socket. Align the small notch at the bottom edge of the DIMM with the key in the socket.

> **NOTE:** Make sure of the orientation of the DIMM.
> Position the DIMM so that a notch in the bottom edge of the DIMM aligns with the keyed socket. Applying too much pressure can damage the socket. Keyed DIMMs insert only one way.



8. Insert the bottom edge of the DIMM into the socket.
9. When the DIMM is inserted, push down on the top edge of the DIMM until the retaining clips snap into place.

> **IMPORTANT:**
>
> - To avoid damage to the socket, do not apply excessive force while pressing the DIMM.
> - Make sure the clips are firmly in place.

10. Install the components you removed in steps 1 to 3.

11. Power on the server and verify that POST displays no error messages.

    If POST displays an error message, take a note on the message and see the POST error messages listed in Chapter 8.

12. Run the BIOS SETUP utility and select [Advanced] → [Memory Configuration] to verify that the installed DIMM shows the status "Normal". (See Chapter 4 or details.)

13. Select "Yes" for [Reset Configuration Data] on the [Advanced] menu.

    This setting is required to change the hardware configuration data. See Chapter 4 for details.

14. If the Windows operating system is in use, set the paging file size to the recommended value (total memory size × 1.5) or a greater value. See Chapter 5 for details.

Removal

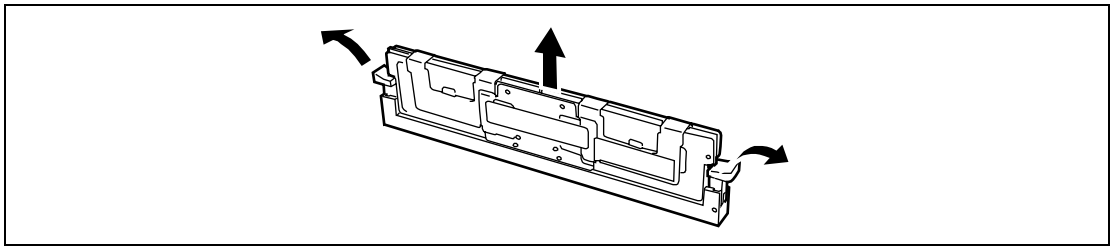
Remove the DIMM depending on the following procedure.

NOTES:

- To remove the failed DIMM, check the error message appearing in POST or NEC ESMPRO to identify the DIMM socket (group) in which the failed DIMM is installed.
- The server operates only when at least two DIMMs are installed.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the logic cover.
4. Open the clips at each end of the socket from which you remove the DIMM.

   The DIMM pops out of the socket



5. Hold the DIMM by the edges, lift it away from the socket, and store it in an anti-static package.
6. Reinstall all parts removed in Steps 3 to 7.

   See installation procedures for detail explanations.
7. Power on the server and verify that POST displays no error messages.

   If POST displays an error message, take a note on the message and see the POST error messages listed in Chapter 8.
8. Start the SETUP and select [Advanced] → [Memory Configuration] → [Memory Retest] → [Enabled] to clear the error information of the removed DIMM. (See Chapter 4 for details.)
9. Select "Yes" for [Reset Configuration Data] on the Advanced menu.

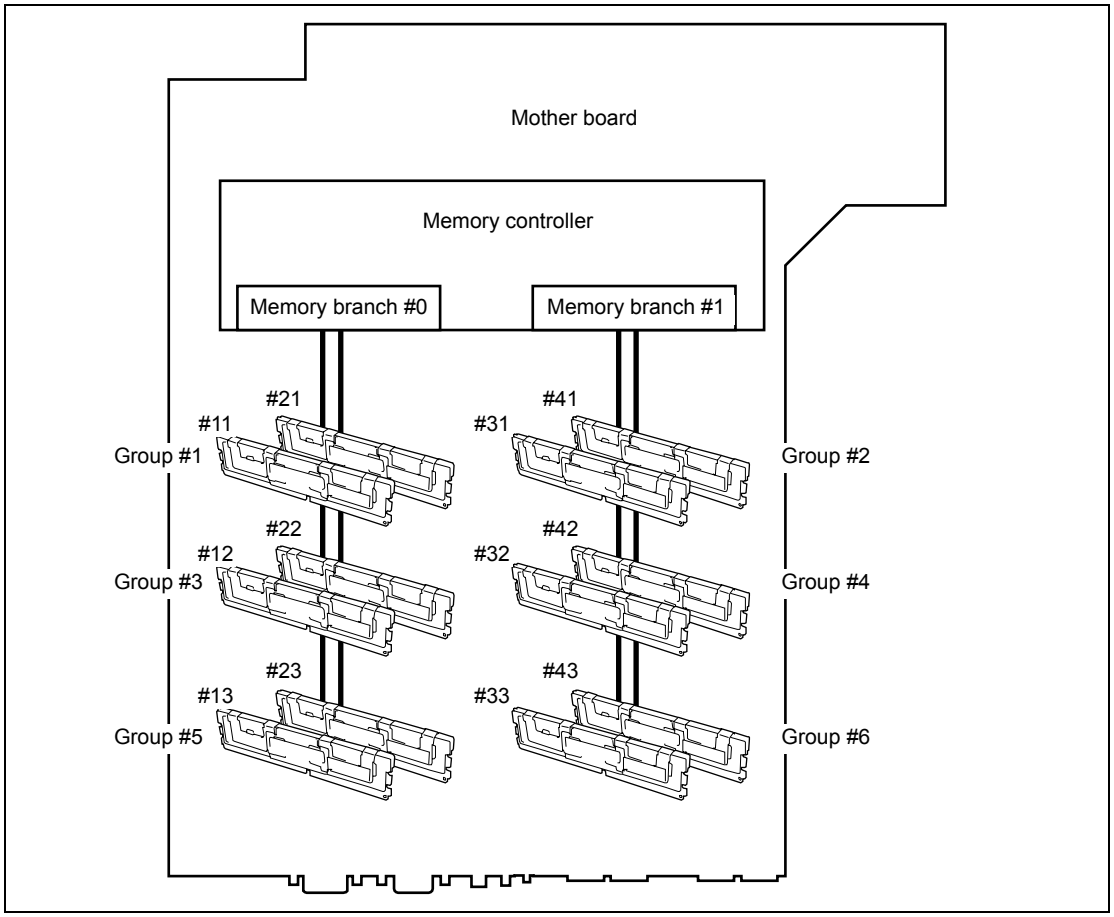
   This setting is required to change the hardware configuration data. See Chapter 4 for details.

Using the Memory RAS Features

The server has the memory mirroring and online spare memory features as well as the x4/x8 SDDC ECC memory feature, which can automatically correct a memory error (multi-bit error) causing system shutdown.

> **IMPORTANT:** The memory mirroring and online spare memory features are not available in the normal memory configuration. (The x4/x8 SDDC ECC memory feature can operate in any configuration.)

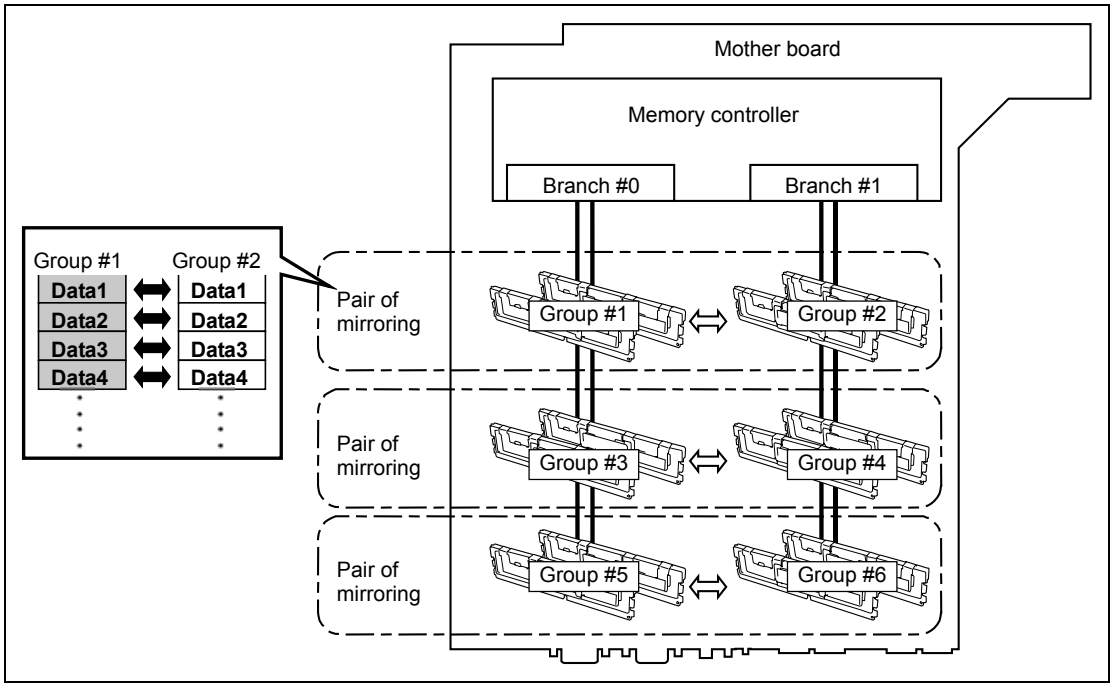
The memory area on the motherboard of the server is divided into two memory branches as shown in the figure below.



The memory mirroring and online spare memory features keep memory redundancy between memory branches and within a memory branch by monitoring or altering memory active/inactive status, respectively.

Memory Mirroring

The memory mirroring feature writes the same data into two groups of DIMMs corresponding with each other between memory branches (mirror set) to provide data redundancy.



NOTE: The operating system only recognizes a half of the total physical capacity.

The memory mirroring feature can be used under the following conditions:

- Install memory devices on four memory sockets configuring a mirror set.
- All the installed memory devices should have the same capacity.
- Run SETUP (see Chapter 4), change parameters appropriately in the [Mirror] menu selected as shown below, save the settings and exit from SETUP.

  [Advanced] → [Memory Configuration] → [Memory RAS Feature] → [Mirror]
- Install memory devices in the following order:

  Groups 1 and 2 → Groups 3 and 4 → Groups 5 and 6

The following mirroring cannot be configured:

- Memory mirroring between different mirror sets
- Memory mirroring within a specific memory branch

Notes on Configuring Memory Mirroring

In memory mirroring configuration, the menus related to memory mirroring in BIOS SETUP are grayed out and unselectable in the following cases:

- When you additionally install DIMMs that unable to configure memory mirroring
- When you remove DIMMs that takes down the memory mirroring

In this case, execute [Load Setup Defaults] to cancel the memory mirroring configuration.

<Procedure>

1. Take a note of settings in BIOS SETUP.
2. Press **F2** during POST to run BIOS SETUP utility.
3. Select [Exit] → [Load Setup Defaults].
4. When a message "Load default configuration now?" appears, select [Yes].
5. Enter the parameter values you have saved in step (1).

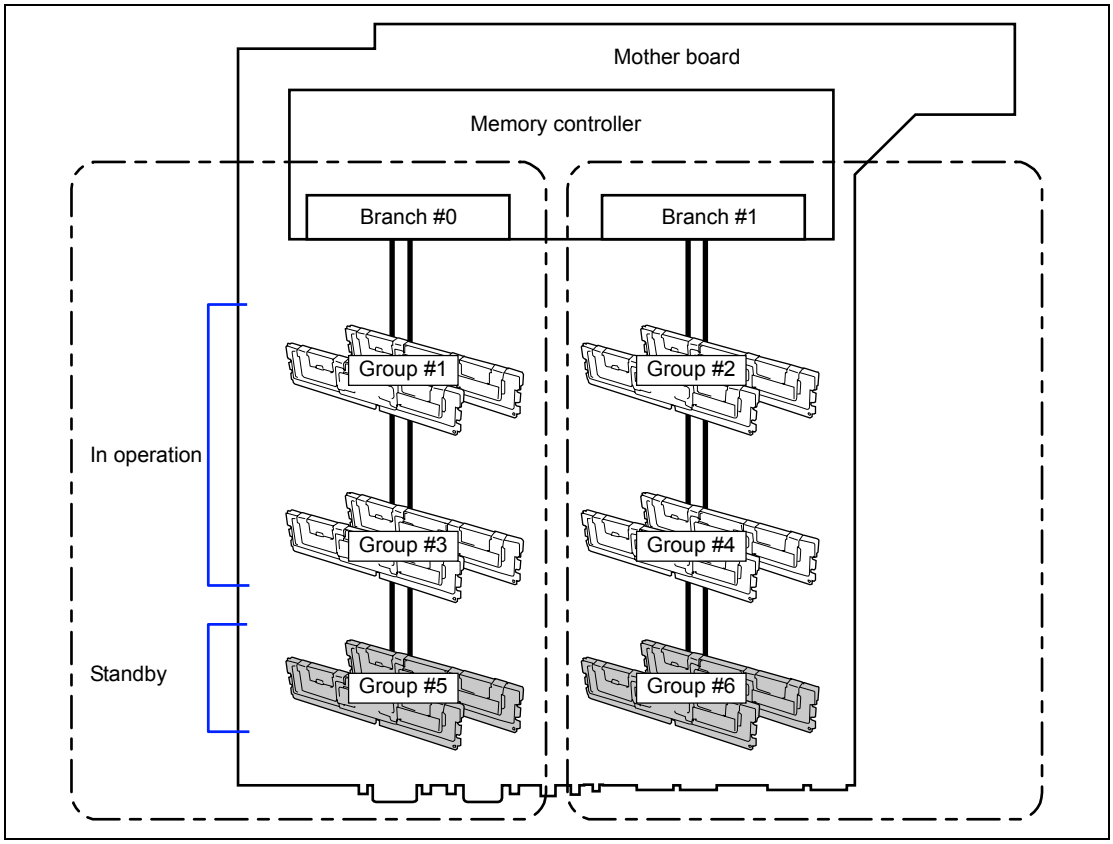
NOTE: Executing [Load Setup Defaults] restores the default values for all Setup parameters. You need to specify those parameters again.

The table below lists examples of DIMM installation patterns enabling the memory mirroring feature to be used.

Example	Memory Set (Group #)		Memory Set (Group #)		Memory Set (Group #)		Capacity	
	#1	#2	#3	#4	#5	#6	Physical	Logical
1	2GB	2GB	-	-	-	-	4GB	2GB
2	2GB	2GB	1GB	1GB	-	-	6GB	3GB
3	2GB	2GB	2GB	2GB	-	-	8GB	4GB
4	2GB	2GB	1GB	1GB	1GB	1GB	8GB	4GB
5	2GB	2GB	1GB	1GB	2GB	2GB	10GB	5GB
6	2GB	2GB	2GB	2GB	1GB	1GB	10GB	5GB
7	2GB	2GB	4GB	4GB	4GB	4GB	12GB	6GB
8	2GB	2GB	2GB	2GB	2GB	2GB	12GB	6GB
9	2GB	2GB	1GB	1GB	4GB	4GB	14GB	7GB
10	2GB	2GB	4GB	4GB	1GB	1GB	14GB	7GB
11	2GB	2GB	2GB	2GB	4GB	4GB	16GB	8GB
12	2GB	2GB	4GB	4GB	2GB	2GB	16GB	8GB
13	2GB	2GB	4GB	4GB	4GB	4GB	20GB	10GB
14	4GB	4GB	4GB	4GB	4GB	4GB	24GB	12GB
15	8GB	8GB	8GB	8GB	8GB	8GB	48GB	24GB

Online Spare Memory

The online memory spare feature puts a group of memory devices within a memory branch into standby status as spare devices. If an unrecoverable error occurs in a DIMM of the running group, the feature automatically changes the running DIMM from the failed one to a DIMM in the standby group to continue the processing.



NOTE: The operating system recognizes the memory devices as those with capacities less than the actual physical capacities. (The recognized capacities vary depending on the number of DIMMs and the physical capacity per DIMM.)

The online spare memory feature can be used under the following conditions:

- Install memory devices to more than one group in each memory branch. The server can operate if the memory branches may be different in the number of DIMMs. For example, no error occurs if memory branches 0 and 1 include four DIMMs (or two groups) and six DIMMs (or three groups), respectively.
- DIMMs installed in a specific memory branch should have the same capacity. The server can operate as long as DIMMs of the same capacity are installed in each memory branch. (For example, the server can operate if the total capacity of memory branch 0 is different from that of memory branch 1.)
- Run SETUP (see Chapter 4), change parameters appropriately in the [Sparing] menu selected as shown below, save the settings and exit from SETUP.

  [Advanced] → [Memory Configuration] → [Sparing]
- Install memory devices in the following order:

  Group 1 → Group 3 → Group 5 for memory branch 0

  Group 2 → Group 4 → Group 6 for memory branch 1

The following sparing can be neither configured nor set.

- Sparing to anther memory branch
- Specification of arbitrary memory devices as spare. The group of the largest number within a specific memory branch can be specified as spare.

The table below lists examples of DIMM installation patterns enabling the online spare memory feature to be used. While the following patterns are provided for memory branch 0, the same patterns can also be adapted to memory branch 1.

Example	Memory Blanch #0 (Group #)			Capacity	
	#1	#3	#5	Physical	Logical
1	1GB	1GB	-	4GB	1GB
2	1GB	1GB	1GB	3GB	2GB
3	2GB	2GB	-	4GB	3GB
4	2GB	2GB	2GB	6GB	5GB
5	4GB	4GB	-	8GB	6GB
6	4GB	4GB	4GB	12GB	10GB
7	8GB	8GB	-	16GB	12GB
8	8GB	8GB	8GB	24GB	20GB

Depending on specification of memory controller, the spare memory is set in unit of rank memory.

The logical memory capacity of single rank memory differs from that of dual rank memory when online spare memory is specified.

- Single rank memory configuration

  Logical memory capacity = (Physical memory capacity * Number of DIMMs) – (Physical memory capacity)

- Dual rank memory configuration

  Logical memory capacity = (Physical memory capacity * Number of DIMMs) – (Physical memory capacity / 2)

The server supports the following product number.

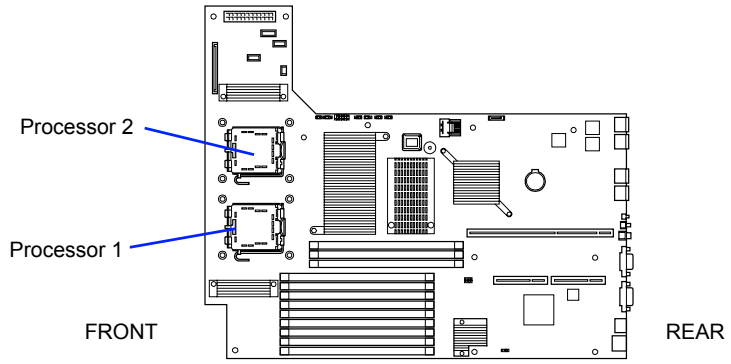
- N8102-309 (Additional 1GB memory): Single rank
- N8102-310/311/312 (Additional 2GB/4GB/8GB memory): Dual rank

PROCESSOR (CPU)

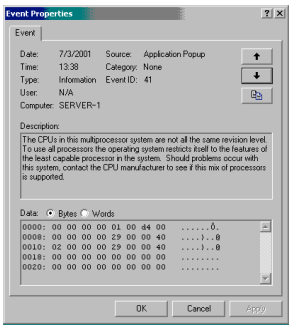
The server may have another CPU installed in addition to the standard CPU (Intel® Xeon® Processor).

IMPORTANT:

- The CPU is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the CPU. Do not touch the CPU pins by a bare hand or place the CPU directly on the desk. For static notes, see the section "Anti-static Measures" described earlier.
- Do not operate the system until confirming that the additionally installed CPU is in normal state.
- Make sure to use the CPU authorized by NEC. Installing a third-party CPU may cause a failure of the CPU as well as the server. Repair of the server due to failures or damage resulted from installing such a board will be charged.



NOTE: If the different revision of the processor is installed in the multiprocessor system, Windows logs the following information every startup. If this message is logged, it is no problem for operation.

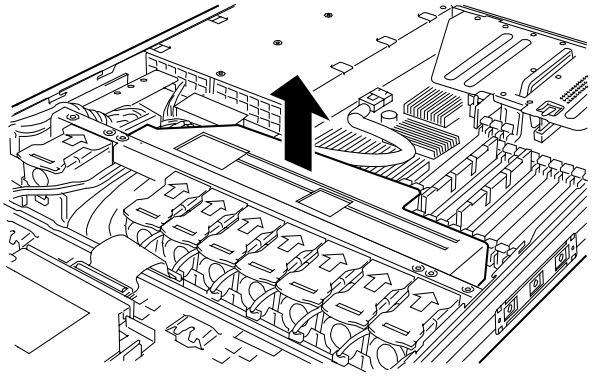


Installation

Take the following steps to install the CPU.

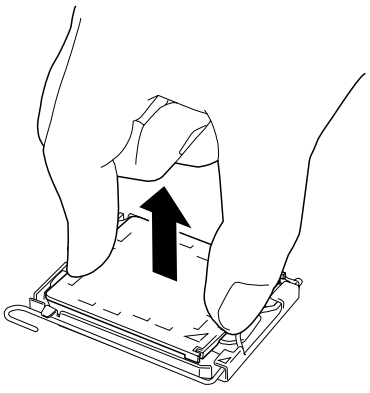
1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the logic cover and drive cover.
4. Remove the processor duct from the chassis.

IMPORTANT: Make sure not to damage the internal cables.

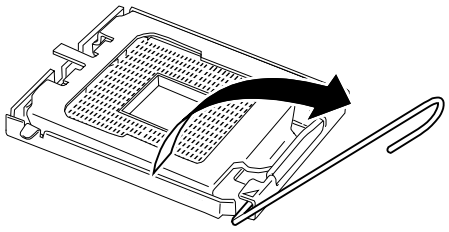


5. Locate the CPU socket which you are going to install CPU.
6. Remove the protective socket cover from the load plate.

IMPORTANT: Do not discard the protective socket cover. Always replace the socket cover if the processor is removed from the socket.

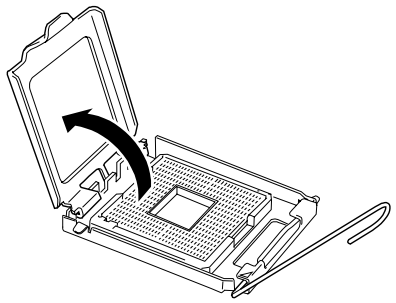


7. Open the socket lever by pushing the lever down and away from the socket.



8. Lift the load plate.

IMPORTANT: Do not touch the socket contacts.



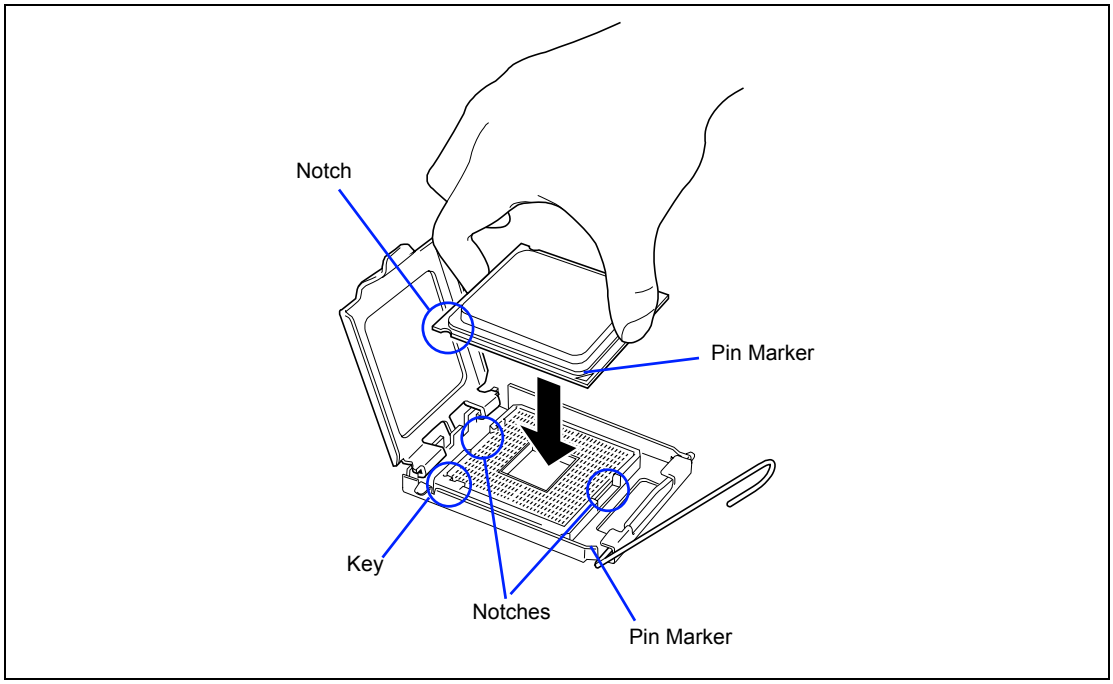
9. Remove the processor from the protective cover.

IMPORTANT:

- Hold the processor only at the edges, being careful not to touch the bottom of the processor.
- Do not discard the protective processor cover.
- Always replace the processor cover if the processor is removed from the socket.

10. Hold the processor with your thumb and index fingers oriented as shown in the figure below.

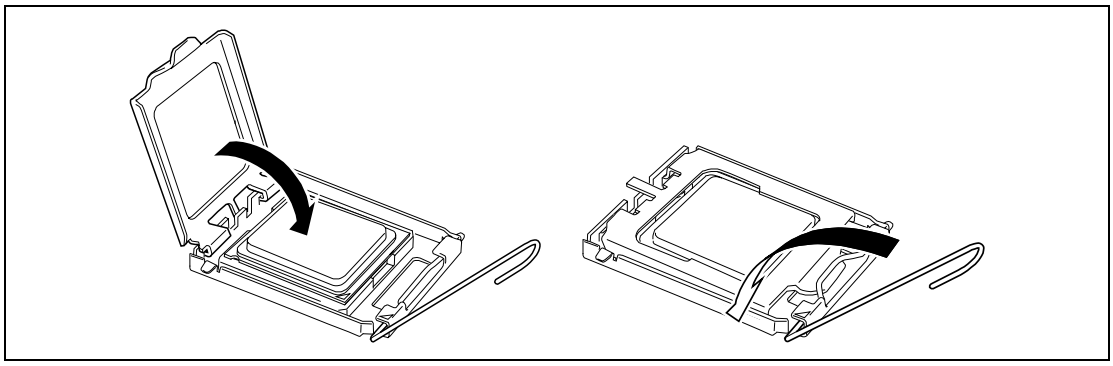
IMPORTANT: Make sure fingers align to the socket cutouts.



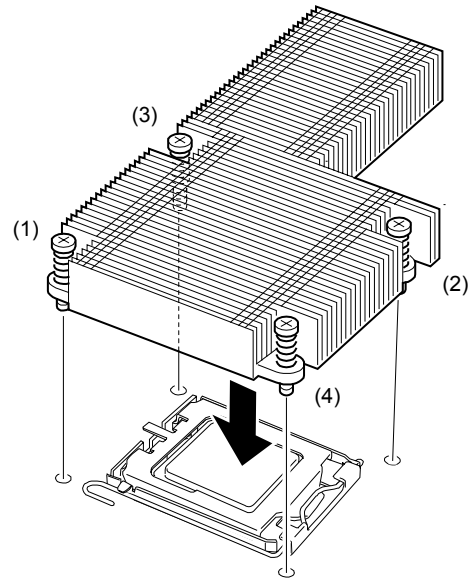
11. Align notches with the socket.

12. Lower the processor straight down without tilting or sliding it in the socket.

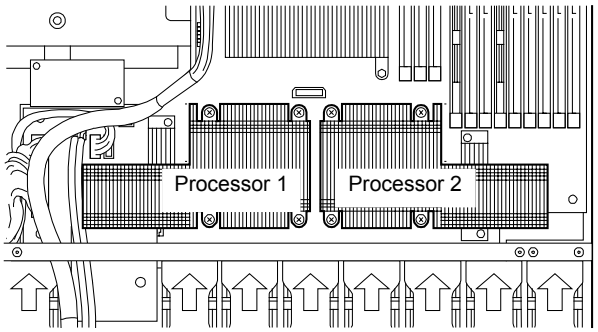
13. While pressing down on the load plate, close and engage the socket lever.



14. Put the heat sink on CPU and fix the heat sink with four screws.



NOTE: Be aware of direction of heat sink (see figure below).

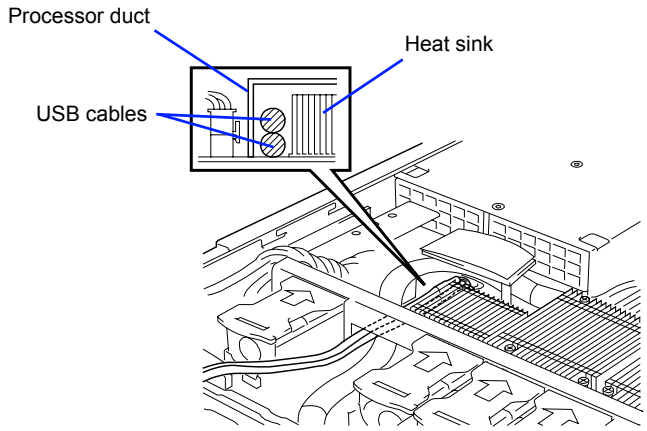


15. Make sure that the heat sink is level.

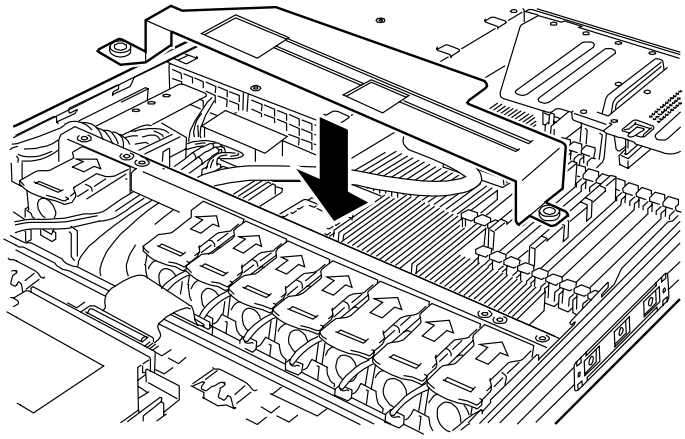
NOTES:

- If the heat sink is not level, remove it, and then install it again. The following probably causes the heat sink not to be level:
  - The CPU is not positioned correctly.
  - All screws are not completely tightened.
- Do not move the secured heat sink.

16. Lay the USB cables as shown in the figure below.

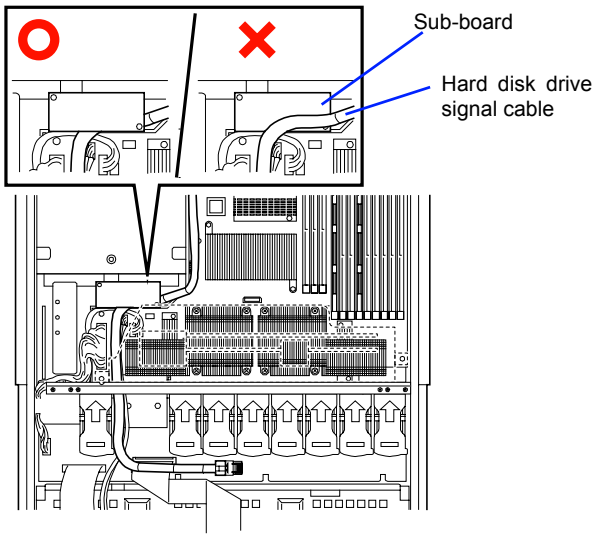


17. Reinstall the processor duct.



NOTES:

- Place the internal USB cables inside the processor duct (see figure above).
- Check to see that the processor duct is firmly installed with no clearance between the duct and chassis.
- Put the hard disk drive signal cable under the sub-board as figure below.



18. Install the covers you removed previously.

19. Power on the server, start the SETUP utility, and set "Processor Retest" of "Processor Settings" on the Main menu to "Enable".

20. Verify that POST displays no error messages.

If POST displays an error message, take a note on the message and see the POST error messages listed in Chapter 8.

21. Set "Reset Configuration Data" on the Advanced menu to "Yes".

This setting is required to change the hardware configuration data. See Chapter 4 for details.

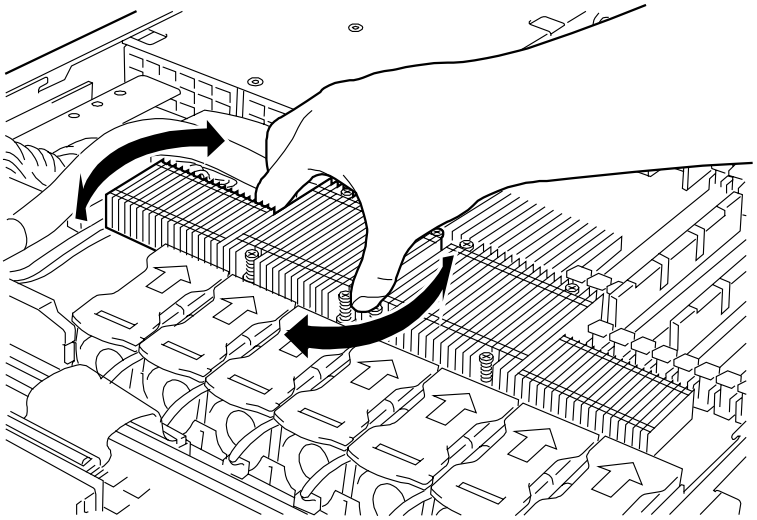
22. To add one or more CPUs to the server in 1-CPU configuration to operate the server with more than one CPU, change the driver of [Computer] in the device manager to [ACPI multi-processor PC] and then update the system (see Chapter 5).

Removal

To remove the CPU, prepare the removal referring to steps 1 and 4 in the installation procedure and do the reverse procedure of steps 14 to 6.

IMPORTANT:

- Do not remove any CPU unless it is failed.
- After the operation, heat may make the cool seat at the bottom of the heat sink adhere to the CPU. To remove the heat sink from the CPU, first turn the heat sink to the left and right lightly to make sure that the heat sink can be apart from the CPU. Removing the heat sink with it adhering to the CPU may cause the CPU and/or socket to be defected.



Do the following procedure if a CPU is removed (or replaced).

1. Start SETUP to select menus "Main" – "Processor Settings" – "Processor Retest" in the order to clear the error information on the removed CPU (see Chapter 4).

   When a CPU is replaced, select menus "Main" – "Processor Settings" to confirm that the ID and L2 Cache of the additional CPU are defined normally (see Chapter 4).

2. Set "Reset Configuration Data" on the Advanced menu to "Yes."

   This is required to update the hardware configuration information. See Chapter 4 for details.

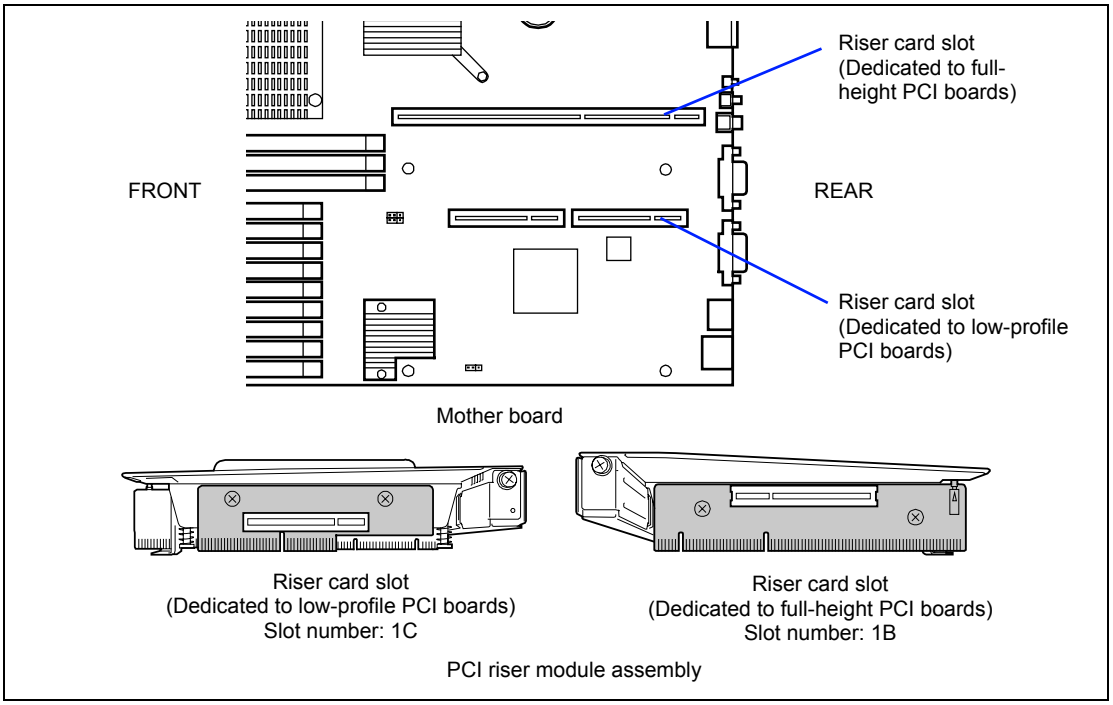
PCI BOARD

The server has a riser card assembly on the mother board that enable installation of PCI boards. The riser card assembly can hole up to two PCI boards.

Insert PCI boards for network extension and file device function extension into PCI board slots in each riser card.

IMPORTANT:

- The PCI board is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the PCI board. Do not touch the PCI board terminals or on-board parts by a bare hand or place the PCI board directly on the desk. For static notes, see the section "Anti-static Measures".
- Some restrictions are imposed on the combination of PCI boards which can be installed in the server. Contact your service representative for details.
- A riser card is designed for installing only low-profile PCI boards or full-height PCI boards. Before installing a PCI board, make sure of the card specification.



PCI riser module assembly

Notes

Observe the following notes on installing/removing a PCI board:

- Do not touch the terminals of the riser cards and the leads of electronic components with your bare hand. Fingerprints and dust left on them cause the server to malfunction due to a connection failure or damage to the leads.
- A riser card is designed for installing only low-profile PCI boards or full-height PCI boards. Before installing a PCI board, make sure of the card specification.
- PCI slot number "1C" is assigned to the riser card for low-profile PCI boards, and "1B" is assigned to the riser card for full-height PCI boards.
- The system detects the boot devices in order of the PCI bus slots 1B (full-height PCI board) and then 1C (low-profile PCI board).
- The PCI devices of the same type (including onboard PCI device) may be recognized in different order from that described above, depending on OS or RAID System BIOS Utility. Check the slot location of PCI device by PCI bus number, device number and function number shown in the table below.

	Bus number	Device number	Function number
Onboard NIC1	C	0	0
Onboard NIC2	C	0	1
Slot 1C	18	0	X
Slot 1B*	3	0	X

* On certain PCI devices, other bus number may be assigned..

- Set "Disabled" for the optional ROM of a LAN device not to be booted by using the BIOS SETUP utility.
- If an additional LAN device is installed, it is hard to push the catch of the connector with your finger that is connected to the LAN port. Disconnect the connector pushing the catch with a standard screwdriver. At this time, be very careful for the screwdriver not to damage the LAN port or other ports.
- If a bootable PCI board (e.g., a RAID Controller, SCSI controller, or LAN card) is additionally installed, the boot priority is changed. After the additional installation, start the BIOS SETUP utility, select [Boot] and set the new boot priority.
- Contact your service representative for the acceptable optional PCI board.

Installation

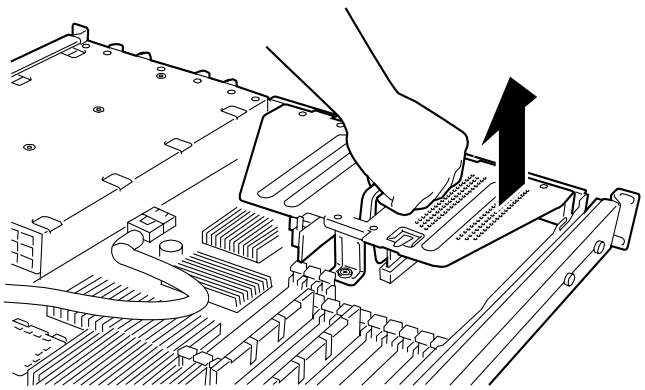
Take the following steps to install a PCI board on the riser card:

IMPORTANT: The full-height riser card is equipped with an "insulator (black)" to protect PCI boards. Do not remove the insulator, and handle it carefully. The insulator is not shown in the figures in this manual for simplifying the illustrations.

NOTES:

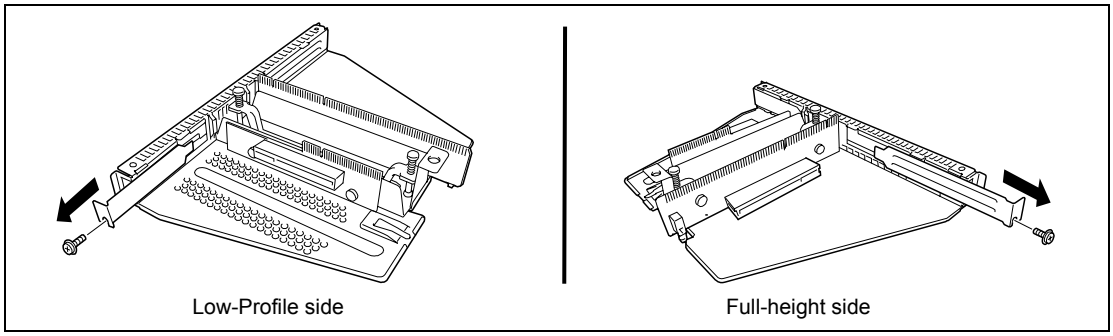
- Each riser card supports low-profile or full-height PCI boards. Before installing a PCI board, confirm that the type of the PCI board.
- When installing a PCI board, confirm that the card connector matches the connector of the riser card.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the logic cover.
4. Grasp a handle on the riser module assembly and lift straight up and remove the riser module assembly from the server.



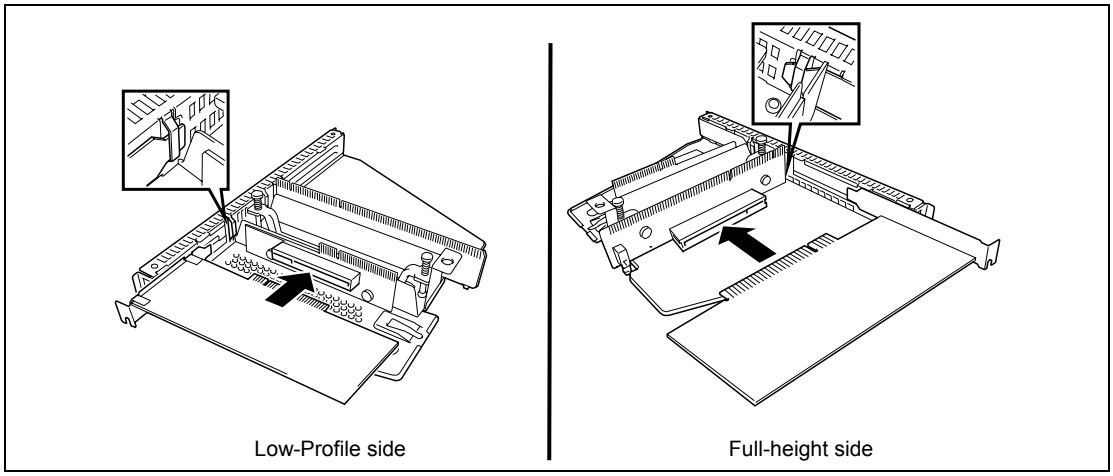
5. Remove the screw from the riser card, and remove the extension slot cover.

NOTE: Keep the removed extension slot cover for future use.



6. Install the PCI board on the riser card.

Align the PCI board terminal section with the riser card slot, and firmly push the PCI board until it is fully seated.



IMPORTANT:

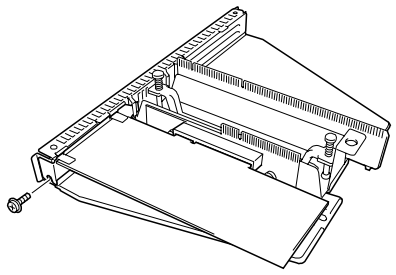
- Do not touch the terminals of the riser cards and PCI boards with your bare hand. Fingerprints and dust left on them cause the server to malfunction.
- If you are unable to install a PCI board correctly, remove it, and then install it again. Be careful not to apply excess force to a PCI board or riser card. Doing so may damage the card.

NOTES:

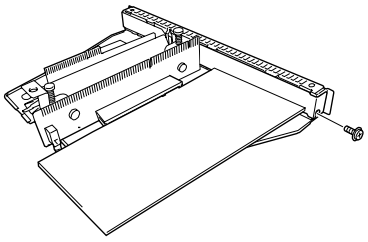
- Confirm that the end of the PCI board bracket is inserted in the frame slot of the riser card.
- Some PCI boards have terminal section that extends over the mating connector.

7. Secure the PCI board with the screw you removed in step 5.

IMPORTANT: This step is to protect the terminals of the riser card from dust or fingerprints. Dust and fingerprints left on them cause the server to malfunction.



Low-Profile side



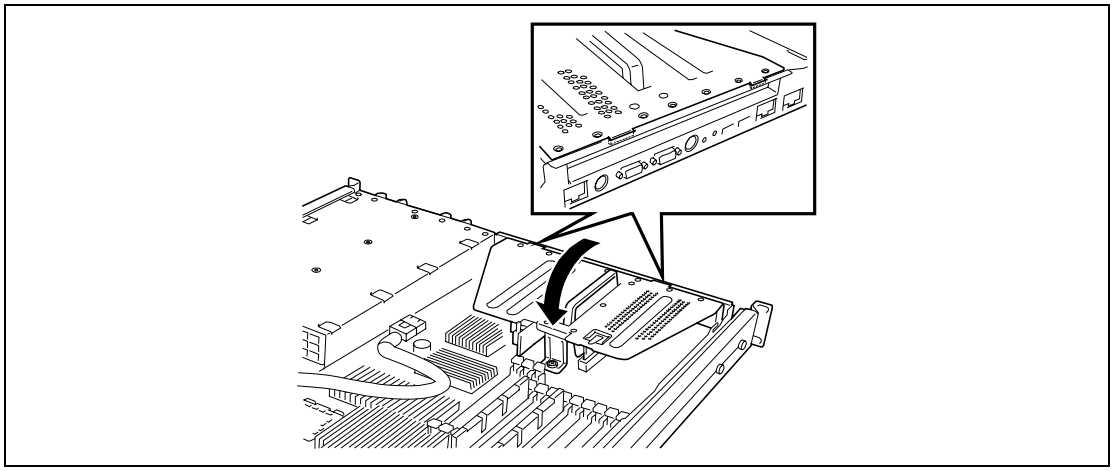
Full-height side

8. Insert the riser module assembly into the slot on the mother board.

Align the riser card terminal section with the slot on the mother board, and firmly push the riser module until it is fully seated.

NOTES:

- There are catches on the riser card frame that are used to secure the riser card to the cabinet. When inserting the riser card, confirm that the catches are correctly fit into the holes on the rear of the cabinet. After the insertion, push the riser card with your fingers until you cannot see any part of the riser card terminal section. The riser card is now fully seated in the slot.
- Pay attention not to damage the components on mother board with the riser card when inserting it into the slot.



9. Install the components you removed previously.

10. Verify that POST displays no error messages.

If POST displays an error message, take a note on the message and see the POST error messages listed in Chapter 8.

11. Run the BIOS SETUP utility and select "Yes" for [Advanced] → [Reset Configuration Data].

This setting is required to change the hardware configuration data. See Chapter 4 for details.

Removal

Remove a PCI board in reverse order of the installation steps.

USE OF INTERNAL HARD DISK DRIVES IN THE RAID SYSTEM

Using the RAID Controller allows you to use hard disk drives in the device bays of the server and those in the optional expansion disk cabinet in the RAID System.

IMPORTANT:

- Making hard disk drives in the RAID System or changing the RAID level initializes hard disk drives. If the hard disk drive to be configured in the RAID System has your valuable data stored, make sure to make a backup copy of the data in another hard disk drive before installing the RAID Controller and configuring the RAID System.
- More than one hard disk drive is required to configure a Logical Drive.
- Use hard disk drives of the same capacity and performance (e.g., revolution) for each pack to configure them in the RAID System.

NOTES:

- Make sure of RAID levels and hard disk drives available for the RAID Controller to choose an appropriate controller.
- A Logical Drive except for RAID0 increases disk reliability. However, the actually available capacity becomes smaller than the total hard disk drive capacity in the Logical Drive.

3.5-inch Disk Model

You can build a RAID System by using the Onboard RAID Controller (LSI Embedded MegaRAID) or optional RAID Controller (N8103-116/117).

Onboard RAID Controller (LSI Embedded MegaRAID)

RAID Controller is factory embedded in your mother board.

By the shipping default, RAID System is set to "Enabled".

Optional RAID Controller (N8103-116/117)

Your server can include the optional RAID Controller (N8103-116/117). The optional RAID Controller can control the internal hard disk drives as the RAID System. To use the hard disk drives in a RAID System, reconnect the hard disk drive interface cable on the mother board.

At the factory, the interface cable is connected to the Mini SAS connector on the mother board. Refer to the manual coming with optional RAID Controller (N8103-116/117) for details.

IMPORTANT: The RAID Controller board is extremely sensitive to static electricity. Make sure to touch the metal frame of the Server to discharge static electricity from your body before handling the RAID Controller. Do not touch the RAID Controller terminals or on-board parts by a bare hand or place the RAID Controller directly on the desk. For static notes, see the section "Anti-static Measures" described earlier.

NOTE: Before installing an optional RAID Controller, run the SETUP utility, select [Advanced] → [PCI Configuration], and confirm that [Enabled] is set for the parameter [PCI Slot xx ROM] (xx: PCI slot number).

Installation

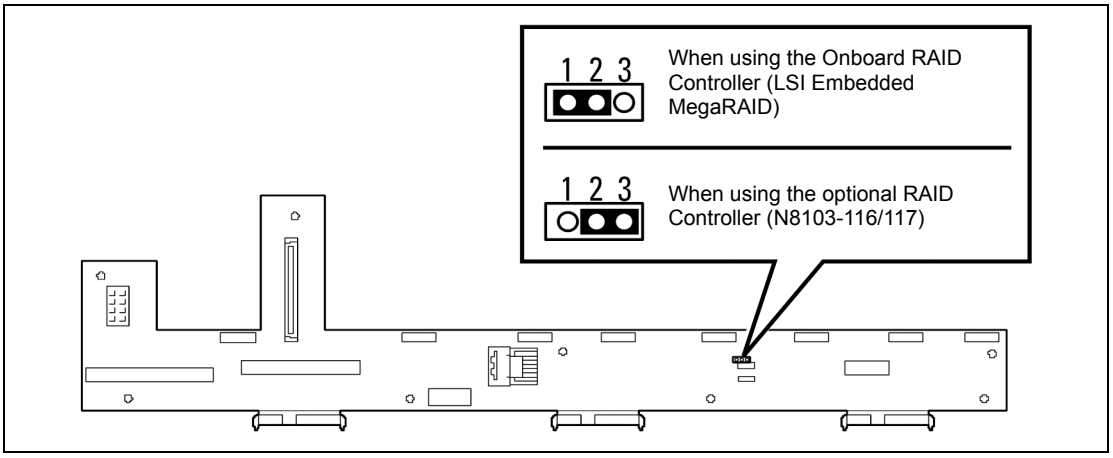
See "PCI Board" in this chapter and manual that comes with the optional RAID Controller for the installation of a RAID Controller (N8103-116/117).

IMPORTANT:

- A riser card for low-profile PCI board differs from the one for full-height PCI board. Before installing a PCI board, make sure of the board specification.
- Some RAID Controller has LED cable connector to be used for indication of disk access. However, this server is not equipped with LED cable connector.
- To use internal hard disk drives in RAID System by connecting the RAID Controller to the full-height riser card, first connect the cable, then connect the riser card with mother board.
- When the RAID Controller is connected, the boot priority specified in BIOS SETUP utility must be eighth or younger. If specified ninth or later, the configuration menu of RAID Controller will fail to start.

Setting Jumper Switch on Backplane

To use an optional RAID Controller (N8103-116/117), you need to change settings of jumper switch on backplane as shown in the figure below.



Removal

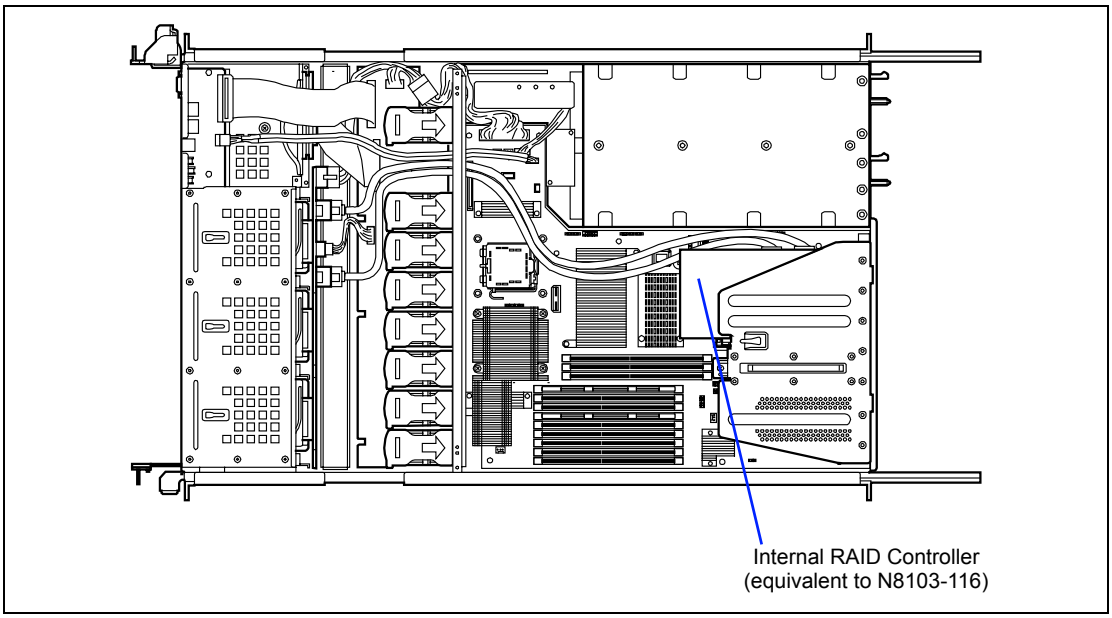
Remove the optional RAID Controller in reverse order of the installation steps.

2.5-inch Disk Model

To build a RAID System, use the Internal RAID Controller (equivalent to N8103-116).

The hard disk drive bays are connected to the Internal RAID Controller (equivalent to N8103-116) at the factory.

Standard Configuration



Use WebBIOS to configure the RAID System. See Chapter 4 for details.

Notice

Observe the following notes on configuring a RAID System:

- The installed hard disk drives (SAS drives or SATA drives) must the same capacity and the same rotational speed. (The minimum number of required disks depends on the configuration of RAID (Redundant Arrays of Inexpensive [Independent] Disks).)
- Select/set a RAID level "RAID0", "RAID1", "RAID5", or "RAID6".

When installing a system in an internal hard disk drive, you should use "Express Setup" to perform all the procedures for RAID System configuration, OS installation, and then OS setup.

Use Express Setup even when not installing a system. Start Express Setup, select [OS Selection] → [Others]. The installer automatically performs all the procedures for RAID System configuration, and then maintenance utility installation.

When making the setup in manual mode, use the RAID System configuration utility in the chip on the board. You can start the utility during execution of POST that automatically starts immediately after you turn on the server power switch. For details, see the online document in the NEC EXPRESSBUILDER DVD provided with the server. (The utility varies depending on the RAID Controller.) For details on the data transfer rate, RAID, and RAID System configuration, see the manual provided with the RAID Controller as well as the online document.

IMPORTANT: When N8103-116/117 is installed, do not let the system enter hibernation or standby mode.

Disk Expansion Unit

A disk expansion unit is an exclusive device that can install up to 12 hard disk drives. (The number of hard disk drives depends on the model.) The server containing a RAID Controller can connect one or two of these devices. For details on the number of devices connected, see the manuals provided with the RAID Controller and disk expansion unit.

IMPORTANT: A disk expansion unit is provided with no hard disk drives. You need to purchase hard disk drives separately.

An optional cable may be required to connect with a disk expansion unit. Refer to the manual coming with the disk expansion unit for details.

After connecting the disk expansion unit, use the RAID System configuration utility in the chip on the board to set the disk expansion unit in a RAID System (RAID0, RAID1, or RAID5). (The utility varies depending on the RAID Controller.) For details on settings and the setting methods, see the online document in the NEC EXPRESSBUILDER DVD provided with the server or the manual provided with the board.

While a disk expansion unit is set in a RAID System, you can use the "Auto Rebuild" feature of the RAID Controller to restore data if one of the hard disk drives installed in the disk expansion unit fails. (Replace the failing hard disk drive while the power is on. (Hot swapping))

IMPORTANT: When N8103-116/117 is installed, do not let the system enter hibernation or standby mode.

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Appendix A

Specifications

3.5-inch disk model / 3.5-inch disk with non-redundant power supply model

Item		NEC Express5800/120Rh-1 N8100-				
		1396F	**1397F**	**1398F**	**1439F**	**1405F**
CPU	Type	Quad-core Intel® Xeon® processor				
	Clock	2.00GHz	2.50GHz	3.16GHz	3.00GHz	3.16GHz
	2nd Cache	2 x 6MB				
	Standard	1				
	Maximum	2				
	Extended Memory 64 Technology	Supported				
Chipset		Intel 5000P (1333 MHz)				
Memory	Memory module	DDR2-667 FB-DIMM, with x4/x8 SDDC feature				
	Minimum	2GB (1GB×2)				
	Maximum	48GB (4GB x 12) (The standard DIMM must be replaced.)				
	Error check	ECC				
Auxiliary storage device	Hard disk drive (standard)	None				
	Hard disk drive (maximum)	SATA2 (Serial ATA2) hard disk drive: 2250GB (750GB x 3) SAS (Serial Attached SCSI) hard disk drive: 900GB (300GBx 3), with optional RAID Controller installed 1GB: cube of 1000 bytes				
	Hot-plug hard disk drive	Supported				
	RAID controller	SATA (Serial ATA)				
	RAID hard disk drive	RAID0/1 (standard)				
	Others	Standard: CD-RW/DVD-ROM drive x 1 (DVD: x3 to x8 speed, CD: x10 to x24 speed) Writing by writing software or OS is unsupported.				
		Required option: 3.5-inch USB floppy disk drive (2-mode) x 1				
Additional slot	3.5-inch device bay	3				
	3.5-inch floppy disk drive bay	1				
	PCI EXPRESS (x8)	1 slot (low-profile)				
	PCI EXPRESS (x8)	1 slot (full-height)				
Display	Graphics accelerator	Embedded on mother board				
	Video RAM	8MB				
	Graphic display	640x480, 800x600, 1,024x768, 1,280x1,024: 16,770,000 colors max.				
LAN interface		1000Base-T/100Base-TX/10Base-T (2 ports) 100Base-TX/10Base-T (1 port for management port)				
Interface	Keyboard/mouse	MINI DIN 6-pin connector (1 port)				
	Analog RGB	MINI D-sub 15-pin (1 port)				
	Serial	D-sub-9-pin (2 ports, 1 for front panel, 1 for rear panel), RS-232C compliant				
	USB2.0	4 ports (2 for front panel, 2 for rear panel)				
	Network	1000Base-T/100Base-TX/10Base-T (RJ-45, 2 ports) 100Base-TX/10Base-T (1 port for management port)				
Redundant power supply		Supported (option)				None
Redundant fan		Supported (standard)				Unavailable
External dimensions (mm)		425 (width) × 43 (height) × 718* (depth) (front bezel excluded)				
Weight (Max.)		16 kg (21 kg)				
Power supply		100 to 120 VAC ±10%, 200 to 240 VAC ±10%, 50/60 Hz ±1 Hz				
Environmental requirements	Temperature	10 to 35°C (operating), -10 to 55°C (non-operating, storage)				
	Humidity	20 to 80% RH (no condensation)				

2.5-Inch disk models

Item			NEC Express5800/120Rh-1 N8100-			
			1390F	1391F	1392F	1438F
CPU	Type		Quad-core Intel® Xeon® processor			
	Clock		2.00GHz	2.50GHz	3.16GHz	3.00GHz
	2nd Cache		2 x 6MB			
	Standard		1			
	Maximum		2			
	Extended Memory 64 Technology		Supported			
Chipset			Intel 5000P (1333 MHz)			
Memory	Memory module		DDR2-667 FB-DIMM, with x4/x8 SDDC feature			
	Minimum		2GB (1GB×2)			
	Maximum		48GB (4GB x 12) (The standard DIMM must be replaced.)			
	Error check		ECC			
Auxiliary storage device	Hard disk drive (standard)		None			
	Hard disk drive (maximum)		SAS (Serial Attached SCSI): 879GB (146.5GB x 6) 1GB: cube of 1000 bytes			
	Hot-plug hard disk drive		Supported			
	RAID controller		SAS (Serial Attached SCSI)			
	RAID hard disk drive		RAID0/1 (standard) RAID5/6 (option)			
	Others		Standard: CD-RW/DVD-ROM drive x 1 (DVD: x3 to x8 speed, CD: x10 to x24 speed) Writing by writing software or OS is unsupported.			
			Required option: 3.5-inch USB floppy disk drive (2-mode) x 1			
Additional slot	2.5-inch device bay		6			
	PCI EXPRESS (x8)		1 slot (low-profile)			
	PCI EXPRESS (x8)		1 slot (full-height) RAID Controller (equivalent to N8103-116) is factory installed.			
Display	Graphics accelerator		Embedded on mother board			
	Video RAM		8MB			
	Graphic display		640x480, 800x600, 1,024x768, 1,280x1,024: 16,770,000 colors max.			
LAN interface			1000Base-T/100Base-TX/10Base-T (2 ports) 100Base-TX/10Base-T (1 port for management port)			
Interface	Keyboard/mouse		MINI DIN 6-pin connector (1 port)			
	Analog RGB		MINI D-sub 15-pin (1 port)			
	Serial		D-sub-9-pin (2 ports, 1 for front panel, 1 for rear panel), RS-232C compliant			
	USB2.0		4 ports (2 for front panel, 2 for rear panel)			
	Network		1000Base-T/100Base-TX/10Base-T (RJ-45, 2 ports) 100Base-TX/10Base-T (1 port for management port)			
Redundant power supply			Supported (option)			
Redundant fan			Supported (standard)			
External dimensions (mm)			425 (width) × 43 (height) × 718* (depth) (front bezel excluded)			
Weight (Max.)			16 kg (20 kg)			
Power supply			100 to 120 VAC ±10%, 200 to 240 VAC ±10%, 50/60 Hz ±1 Hz			
Environmental requirements		Temperature	10 to 35°C (operating), -10 to 55°C (non-operating, storage)			
		Humidity	20 to 80% RH (no condensation)			

Appendix B

Other Precautions

Transfer Rate of the On-board LAN Controller

The mother board includes the two network interface controllers that supports 10Base-T, 100Base-TX, and 1000Base-T networks and a capable of full or half duplex.

The both controllers can automatically detect and switch for network speed and transfer mode connected to the HUB. However, for proper network operation, specify the "Link Speed & Duplex" value the same as the value specified for HUB.

Server Management Software

The NEC EXPRESSBUILDER DVD that comes with the server contains the NEC ESMPRO utility.

NEC recommends that you should install the NEC ESMPRO for effective use of the reliability enhancement features of the server.

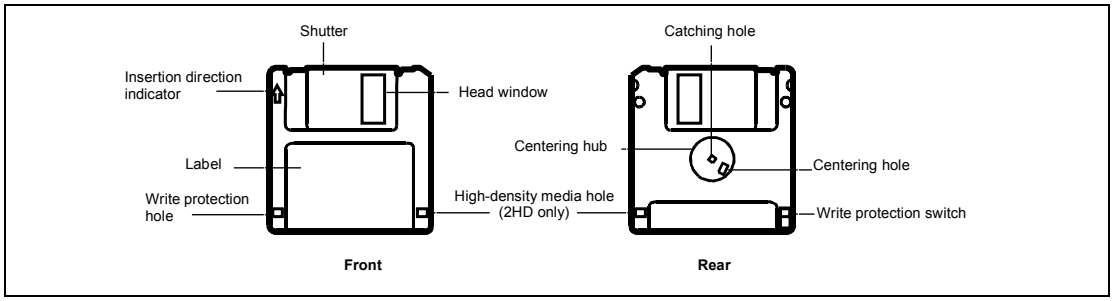
Floppy Disk

The following describes use of the floppy disk.

Floppy disk type

The server uses 3.5-inch floppy disks. You can use the following two types of 3.5-inch floppy disks:

- 2HD floppy disk (double-sided high-density track type)
  Stores data of 1.44MB.
- 2DD floppy disk (double-sided double-density track type)
  Stores data of 720KB.



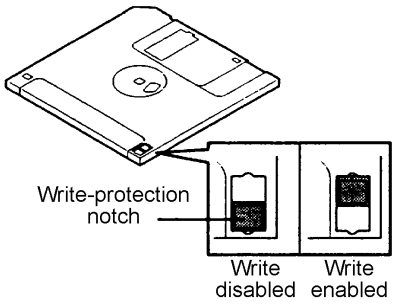
Notes on use

The floppy disk is an important data storage media with delicate structure and requires care. Keep the following notes in mind to use it:

- Insert the floppy disk into the floppy disk drive gently as far as it goes.
- Attach the label to the correct position.
- Do not write anything directly onto the disk surface with a pencil or ball-point pen.
- Do not open the shutter.
- Do not use the floppy disk in a dusty place.
- Do not place anything on the floppy disk.
- Do not leave the floppy disk in a high-temperature place (e.g., place exposed to direct sunlight or close to a heater).
- Do not leave the floppy disk with foods and drinks, or in a place exposed to cigarette smoke.
- Do not leave the floppy disk near any form of liquid or a chemical or in a place where a chemical may be accidentally sprayed over them.
- Do not place any magnetic objects (e.g., magnet) near the floppy disk.
- Do not clip the floppy disk or drop it.
- Keep the floppy disk in a floppy disk case that protects it from magnetism and dust.

- Write-protection

  A floppy disk has a write-protect switch that prevents the stored data from accidental erasure.



  You can read data from a write-protected floppy disk, but you cannot save data into the floppy disk or format it. NEC recommends that you should write-protect any floppy disk containing valuable data unless you are about to save data.

  To write-protect a 3.5-inch floppy disk, use the write-protect switch provided on its back.

- Disk format

  To write data into a floppy disk, the floppy disk must be "formatted." "Formatting" is to initialize the floppy disk and make it available for the system environment (operating system).

  IMPORTANT:

  - Formatting a used floppy disk clears all the data contained in it, if any.
  - Formatting a floppy disk from the DOS command line is not available with the server. Use a formatted floppy disk to work with it on the DOS command line.

  The format method depends on your operating system. Refer to the manual that comes with your operating system for details.

- Data backup

  "Data backup" is to copy data stored in a media into another media (e.g., floppy disk, digital audio tape, or magnet-optical disk).

  IMPORTANT: Make sure to make a back-up copy of every floppy disk, if provided.

  The floppy disk is a very delicate storage media. Dust or thermal changes, as well as operator's misconduct or server failures, may cause loss of data. To avoid loss of data, NEC recommends that you should make a back-up copy of your valuable data on a regular basis.

CD/DVD Discs

Keep the following notes in mind to use the disc for the server:

- Press the center of the storage case to remove the disc from the case.
- Do not drop the disc.
- Do not place anything on the disc or bend the disc.
- Do not attach any label onto the disc.
- Do not touch the signal side (nothing is printed on this side) with your hand.
- Place the disc with its printed side upward and gently put it on the tray.
- Do not scratch the disc or write anything directly on it with a pencil or ball-point pen.
- Do not leave the disc with foods and drinks, or in a place exposed to cigarette smoke.
- Do not leave the disc in a high-temperature place (e.g., place exposed to direct sunlight or close to a heater).
- When dust or fingerprints are attached on the disc, wipe the disc from its center to edge with a dry soft cloth slowly and gently.
- Use the disc cleaner to clean the disc. Do not use record spray/cleaner, benzene, or thinner.
- Keep the disc in a disc case when not in use.

Tape Media

The following describes data handling with the DAT, DLT, or AIT optionally available for the server.

- Saving your valuable data

  When you save your valuable data or programs into the cartridge tape, you should save them into two cartridge tapes to make the primary and secondary tapes.

  This enables you to restore your data from one tape when the other makes a read error, as well as to protect your valuable data and programs from loss.

- Three-generation data management

  NEC recommends that you should employ three-generation data management for data storage.

  Three-generation data management uses three cartridge tapes: A, B, and C. You save data to tape A on the first day, tape B on the second day, tape C on the third day, tape A on the forth day, and so on. That is, you save data into cartridge tapes cyclically from tape A through C.

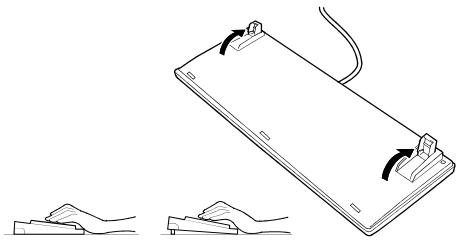
  This enables you, for example, to use tape B to restore the data when tape C makes a read error. Also when both tapes B and C make a read error, you can restore your valuable data by using the data stored in tape A.

Keyboard

The keyboard is a device to instruct you computer by entering alphanumeric characters or symbols.

IMPORTANT:

- Do not pour any liquid such as water or put anything into the keyboard. Doing so may cause a failure of the keyboard.
- The keyboard provided with the server is designed for adjustment of an angle. Adjust the keyboard angle at which the keyboard is easy to operate. The adjustment assists in reducing strain on your shoulders, arms, and fingers.



NOTE: The keyboard functions depend on the software. Refer to the manual that comes with the software for details.

Mouse

Like the keyboard, the mouse is a device to instruct your computer. Many OS's and application software require the mouse for operation.

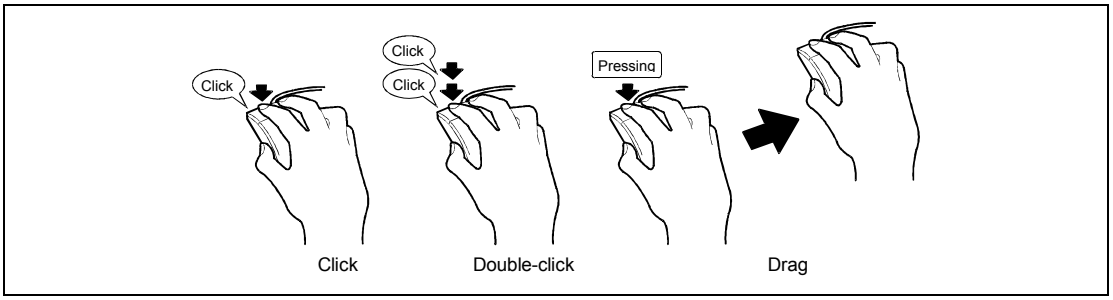
NOTE:

- Functions assigned to the mouse buttons vary depending on the software. For details, refer to the manual provided with the software.
- Use the mouse on a clean desk. Using the mouse on a dusty or dirty desk disturbs smooth movement or normal operation of the mouse. When your mouse movement seems dull, clean your mouse. (See Chapter 7.)

Mouse operation includes "Click," "Double-click," and "Drag."

Click:	Press the button only once and release it.
Double-click:	Press the button twice consecutively and release it.
Drag:	Press and hold the button and move the mouse.

Operation of the server involves combinations of these mouse operations and data entries with the keyboard.



Appendix C

IRQ

The factory-set interrupt requests is listed below. Find an appropriate one to install an optional device.

IRQ	Peripheral Device (Controller)	IRQ	Peripheral Device (Controller)
0	System timer	12	SM Bus
1	–	13	Numeric processor
2	–	14	Primary IDE
3	COM2 serial port	15	–
4	COM1 serial port	16	VGA
5	PCI	17	–
6	–	18	LAN1
7	PCI	19	LAN2
8	Real-time clock	20	USB
9	ACPI compliant system	21	USB
10	PCI	22	USB
11	Mother board resource	23	USB

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Appendix D

Installing Windows Server 2003 x64 Editions

This section explains how to install the Windows Server 2003 x64 Editions.

NOTICE

Read the following notes or information before installing the Windows Server 2003 x64 Editions.

Optional Board Supported by NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER DVD attached to your server supports the following optional boards;

> **NOTE:** If you want to install the other boards by using a driver floppy disk ("OEM-FD for Mass storage device"), except ones listed below, see "Installing with the OEM-FD for Mass storage device" and "Installing Optional Mass Storage Driver" of "Parameter File Creator" in Chapter 6.

- Controllers supporting installation of OS with Express Setup
  - N8103-116 RAID controller (128 MB, RAID0/1)
  - N8103-117 RAID controller (128 MB, RAID0/1/5/6)
  - LSI Embedded MegaRAID (embedded on the mother board)
- Other controllers
  - N8103-75 SCSI Controller*
  - N8103-95 SCSI Controller*
  - N8103-104 SAS Controller*
  - N8103-107 SCSI Controller*

  * Option.

Service Pack Which EXPRESSBUILDER Supports

The EXPRESSBUILDER DVD attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2003 R2 x64 Edition
  - OS installation media (with Service Pack 2)
  - OS installation media (No Service Pack) + Service Pack 2
  - OS installation media (No Service Pack)

Installing Service Pack

You can install the Service Pack on the server. When the Service Pack is not attached to your system, prepare it by yourself.

Updating System

If you modified the Windows system, execute "Update the system" in Windows Autorun Menu.

Re-installing to the Hard Disk Drive which has been upgraded to Dynamic Disk

If you want to leave the existing partition when installing the system on the hard disk drive upgraded to Dynamic Disk, note the following issue:

- Do not select the partition that OS had been installed as the partition to install the OS newly.
- Select "Use the current File System" for the format of OS partition.

Mounting MO Device

Do not mount an MO device on your server during the Windows installation.

About Removable Media

Do not set removable media, such as DAT, into the device mounted on your server during the OS installation.

Floppy Disk Drive

The internal floppy disk drive is not included in your system at the standard configuration. Prepare the optional USB floppy disk drive if necessary.

About the System Partition Size

The system partition size can be calculated from the following formula.

Size necessary to install the system	+ Paging File Size + Dump File Size + Application Size
Size necessary to install the system	= 4100MB (Windows Server 2003 x64 Editions)
	= 4100MB (Windows Server 2003 x64 Editions with ServicePack 2)
	= 5900MB (Windows Server 2003 x64 Editions + Service Pack 2 CD-ROM)
Paging File Size (Recommended)	= Mounted Memory Size * 1.5
Dump file Size	= Mounted Memory Size + 1MB
Application Size	= Required Size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- Regardless of the size of the mounted memory, or the Write debugging information (type of memory dump), the maximum size of the dump file is 'The size of the mounted memory + 1MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

For example, if the mounted memory size is 512MB, the partition size will be calculated by the above formula as follows:

4100MB + (512MB * 1.5) + (512MB + 1MB) + Application Size
= 5381MB + Application Size

Dividing into the partition of the recommended size into multiple disks as written below will solve problem that it cannot be reserved in one disk.

1. Set the "Size required for installation + Paging file size".
2. See Chapter 5 and set that debugging information (equivalent to the dump file size) is to be written to a separate disk.

   (If the disk does not have enough free space to enable the dump file size to be written, then after installing the system using the "Size required for installation + Paging file size", install an additional new disk.)

INSTALLING WINDOWS SERVER 2003 X64 EDITIONS

Preparations for Installation

- NEC EXPRESSBUILDER DVD
- Microsoft Windows Server 2003 R2 Standard x64 Edition (CD-ROM) / Microsoft Windows Server 2003 R2 Enterprise x64 Edition (CD-ROM)
- Microsoft Windows Server 2003 x64 Editions Service Pack 2 (CD-ROM)
- User's Guide
- Getting Started
- Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER

Creating "Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER"

Before installing, create Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER.

> **NOTE:** If you have already "Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER" for NEC Express5800 Server which you are going to install Windows Server 2003 x64 Editions, you do not need to create it again.

You can create Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER with the following two procedures.

- Create from the menu which appears when running NEC Express5800 Server with NEC EXPRESSBUILDER.

  If you have only NEC Express5800 Server to create Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER, use this procedure.

  If Windows Server 2003 can be operated on NEC Express5800 Server, you can use the other procedure described later.

  Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Turn on your NEC Express5800 Server.
3. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
4. Press the RESET switch or press **Ctrl**, **Alt** and **Delete** to reboot the server. (You may also turn off and then on again to reboot the server.)

   The system will boot from the DVD-ROM and NEC EXPRESSBUILDER starts.
5. Select [Create the OEM-Disk for Windows] from [Tools Menu] step.
6. Select [Create an Windows Server 2003 x64 Editions OEM-Disk for EXPRESSBUILDER] at [Create OEM-Disk] and click [Perform].
7. Insert a floppy disk into the floppy disk drive according to the instruction on the screen.

   Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER will be created.

   Write-protect and attach a label, then keep it safely.

■ Create from [Autorun Menu]

This menu requires Microsoft Windows XP, Vista or Windows Server 2003(or later).

You can create Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER from [Autorun Menu], if you have the computer on which the above operating systems operate.

Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Start the Operating System.
3. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.

   The Menu will appear.
4. Click [Create drive disk] and select [OEM-Disk for Windows Server 2003 x64 Edition].

   NOTE: You can do the same operation with the menu appeared by the Right-click.

5. Insert the floppy disk into the floppy disk drive according to the message.

   Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER will be created.

   Write-protect and attach a label, then keep it safely.

Windows Server 2003 x64 Editions Clean Installation

This section explains how to perform a clean installation of Windows Server 2003 x64 Editions.

1. Turn on the system power.
2. Insert the Windows Server 2003 x64 Edition CD-ROM into the optical disk drive.
3. Press **Ctrl** + **Alt** + **Delete** to reset the system.

   After a bootable operating system has been installed on the hard disk drive, press **Enter** while the message "Press any key to boot from CD..." is displayed at the top of the screen.

   If no bootable operating system exists on the hard disk drive, this step is unnecessary.

   The Windows Server 2003 x64 Editions setup screen will appear.

   If the screen is not displayed, **Enter** was not pressed properly.

   Begin after turning on the system power again.
4. Press **F6** in a few seconds when the window is in either of the following states.
   - "Setup is inspecting your computer's hardware configuration ..." or "Press F6 if you need to install a third party SCSI or RAID driver..." is displayed.
   - A screen with a solid blue background is displayed.

   IMPORTANT: There is no visible indication on screen when **F6** has been pressed
5. When the following message is displayed, press **S**.

   ```
   Setup could not determine the type of one or more mass storage devices
   installed in your system, or you have chosen to manually specify an adapter.
   Currently, Setup will load support for the following mass storage device(s).
   ```

   The following message is displayed.

   ```
   Please insert the disk labeled
   manufacturer-supplied hardware support disk
   into Drive A:
   *Press ENTER when ready.
   ```
6. Insert the Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER into the floppy disk drive, and press **Enter**.

   A list of mass storage devices is displayed.

   If you utilize LSI Embedded MegaRAID, go on the step 8.
7. Select the [Intel(R) ESB2 SATA AHCI Controller (Server ESB2)] and press **Enter**.

8. Select the proper SCSI Adapter and press **Enter**.

- [LSI MegaRAID SAS RAID Controller Driver (Server 2003 for x64)]
  (When N8103-116 board is installed.)
- [LSI MegaRAID SAS RAID Controller Driver (Server 2003 for x64)]
  (When N8103-117 board is installed.)
- [LSI Embedded MegaRAID (Windows XP/2003 64-bit)]
  (When LSI Embedded MegaRAID is used.)

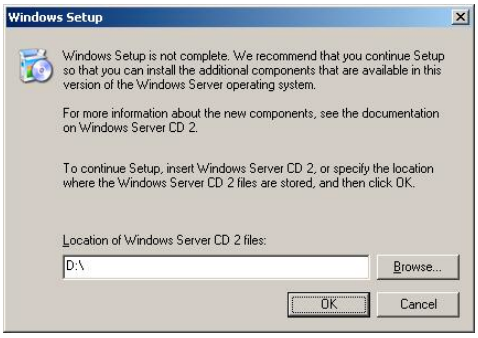
Continue performing tasks according to the subsequent messages that appear.

9. When the following message is shown, press **Enter** to start "Welcome to Setup".

IMPORTANT: If you install Windows Server 2003 x64 Editions on the hard disk larger than 2,097,152MB (2TB), you can specify only a value equal to or less than 2,097,152MB as partition size.

10. When the installation of Windows Server 2003 x64 Edition has finished, the system reboots automatically.

11. The [Windows Setup] screen will be displayed after logged on to the system.



IMPORTANT:

- In this case, the [Windows Setup] screen may not be displayed.
  Be sure to install Microsoft Windows Server 2003 R2 x64 Edition DISC 2 according to the following procedures.
- You can install Microsoft Windows Server 2003 R2 x64 Edition DISC 2 after the application of "System update".
  Be sure to install Microsoft Windows Server 2003 R2 x64 Edition DISC 2.
  In this case, note that the [Windows Setup] screen is not displayed.

12. Insert Microsoft Windows Server 2003 R2 x64 Edition DISC 2 CD-ROM into the optical disk drive.

Confirm the parameters and click [OK].

13. When the installation has completed, remove Microsoft Windows Server 2003 R2 x64 Edition DISC 2 CD-ROM from the optical disk drive, and restart the system.

After installation is completed, be sure to execute the tasks described in "Driver Installation and Advanced Settings" and "Updating the System" of this chapter.

Updating the System - Applying Service Pack -

Update the system in the situation below:

- CPU is expanded (expanded to single processor to multi-processor).
- Modified system configuration.
- Recovered the system using recovery process.

The system update brings the correction program provided by Microsoft to be applied to reinforce the system security. The system update is recommended.

It is necessary to use ServicePack2 or more. ServicePack 2 need not be applied again when Windows Server 2003 x64 Editions CD-ROM where ServicePack 2 is included is used and it is installed.

If you install Windows Server 2003 x64 Editions CD-ROM which contains Service Pack 2, you do not have to apply "Hotfix for Windows x64" or "Hotfix for Windows Server 2003 (KB921411)".

Go on the section of "Updating the System".

Perform "Updating the System" and application of the "Hotfix (KB921411)".

IMPORTANT: In the situation below, make sure to apply "Updating the System" and "Hotfix (KB921411)".

- Modified system configuration
- Recovered the system using recovery process.

NOTE: If you use Windows Server 2003 x64 Editions CD-ROM which includes Service Pack 2, the application of "Hotfix (KB921411)" is not required.

Application Process of the Hotfix (KB921411)

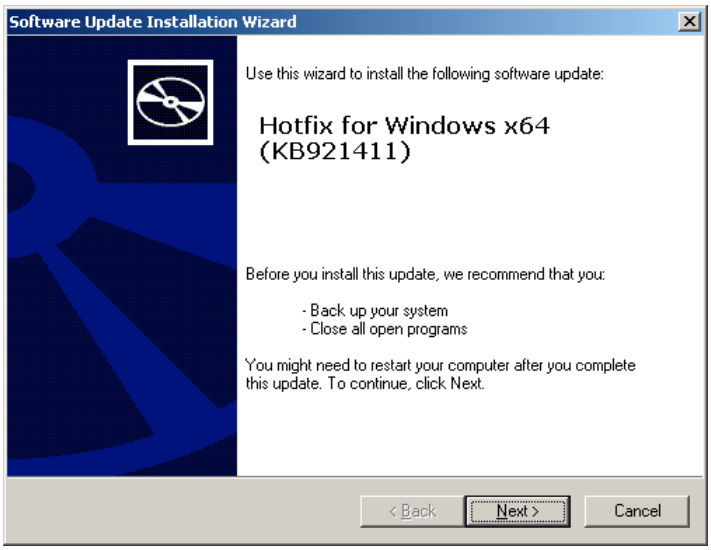
Apply the "Hotfix (KB921411)" before execute "Updating the System".

1. Log on to the system by the account with administrator authority to the server (such as administrator).
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
3. Click Start menu and [Run], and then execute the following command.

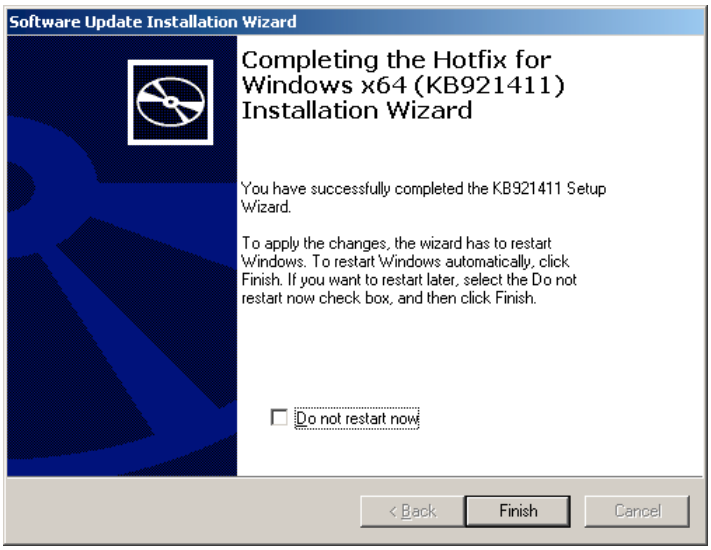
   <When Windows Server 2003 x64 Editions is used>

   \002\win\winnt\w2k3amd\qfe\jpn\kb921411.exe
4. When the following message is displayed, click [Next].

   After that, follow the message to continue the process.



5. When the following message is displayed, make sure to click [Finish] to restart the system.



With that, application process of the Hotfix (KB921411) is finished.

Application Process of "Updating the System"

"Updating the System" applies the drivers necessary for NEC Express5800 Series.

Follow this process after Hotfix for Windows x64 (KB921411) or Hotfix for Windows Server 2003 (KB921411) had been applied.

> **NOTE:** If you install Windows CD-ROM that contains Service Pack 2 to your system, you do not have to apply Service pack 2 again.

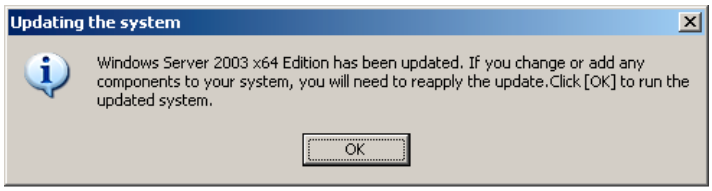
1. Log on to the system with the account that has administrative privilege (e.g.administrator).
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of server.

   The Autorun Menu will be displayed
3. Left-click on [Setup Windows], and then click [Update the system].

> **NOTE:** Right-clicking on the Autorun Menu produces the same outcome.

Follow the message of the screen to proceed the application.

[OK] dialog box will be displayed.



IMPORTANT: During the "Updating the System", the following message may be shown, but there is no impact to the operation.
Do not click [cancel] since it may be taken away after a few seconds.

4. Click [OK] to restart the system.
5. When the reboot is started, Remove the NEC EXPRESSBUILDER DVD from the optical disk drive immediately.

Recovery Process

If "Updating the System" is executed before the application of the "Hotfix for Windows x64 (KB921411)", "!" may be displayed on the USB root hub.

If "!" is displayed on the USB root hub, perform application of the "Hotfix for Windows x64 (KB921411)" and the "Updating the System" according to the following process.

1. Start the Windows Explorer, and click [Tools] and [Folder Options].
2. Select [Files and Folders] - [Hidden files and folders] - [Show hidden files and folders] radio button from Advanced settings in the [View] tab.
3. Check off the following check box in the [Files and Folders] from Advanced settings in the [View] tab, and then click [OK].

   Hide extensions for know file type

   Hide protected operating system files [Recommended]

   When the message "You have chosen to display protected operating system files..." is displayed, click [Yes].
4. Make sure of the files.

   Open "<System drive:>\WINDOWS\system32\drivers" directory, and make sure usbhub.sys and usbport.sys are exists in the directory.

   If you can not found them, copy the files according to the following process.

   (1) Open "<System drive:>\WINDOWS\system32\dllcache" directory.

   (2) Copy usbhub.sys and usbport.sys from the directory noted above to "<Systemdrive:>\WINDOWS\system32\drivers".
5. Restart the system.
6. Refer to [Application process of the Hotfix (KB921411)] and apply the "Hotfix for Windows x64 (KB921411)".
7. Refer to [Application process of "Updating the System"] and execute "Updating the System".
8. Restart the system.

   With that, process is finished.

DRIVER INSTALLATION AND ADVANCED SETTINGS

This section describes on how to install and setup various standard drivers mounted on the device.

For the information on installing and setting up the driver that is not described in this section, please refer to the document attached to the driver.

PROSet

> **NOTE:** All of the operation that related to Intel® PROSet is must be executed by administrator privileges. Operation by [Remote Desktop Connection] is prohibited.
>
> Without changing any parameter when opened the properties of adapter teaming, please click the [Cancel] button for close the dialog.
>
> Click [OK] button will cause temporary loss of network connectivity.

PROSet is a utility that confirms the function of network contained in network driver.

Utilizing PROSet enables the following items:

- Confirm detailed information of the adapter.
- Diagnose loop back test, packet transmission test and so on.
- Setup of teaming.

Configuring several network adapters as one team provides the server a tolerant environment on any trouble and enhances throughput between the switches.

PROSet is necessary to utilize these features.

Follow the procedure below to install PROSet.

1. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.

   If the autorun menu is displayed, close menu screen.

2. The [Windows Explorer] dialog starts.

   * The procedure in the case of the standard start menu

     Click Start menu and click [Windows Explorer].

   * The procedure in the case of the classic start menu

     Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].

3. Run "dxsetup.exe" in the following directory.

   \002\win\winnt\w2k3amd\dl3\proset\winx64

   The [Intel(R) PROSet - InstallShield Wizard] dialog starts.

4. Click [Next].
5. Choose "I accept the terms in the license agreement" and click [Next].
6. Click [Next].
7. Choose "I accept the terms in the license agreement" and click [Next].
8. Click [Install].
9. When [InstallShield Wizard Completed] window is displayed, click [Finished].
10. Remove the NEC EXPRESSBUILDER DVD from the optical disk drive, restart the system.

Network Driver

Specify the details of network driver.

One standard network driver that is mounted will be installed automatically, but the link speed and Duplex mode need to be specified manually.

IP addresses is not be able to set when the "Internet Protocol (TCP/IP)" check box OFF.

This phenomenon will occur with the certain condition.

Check ON the "Internet Protocol (TCP/IP)" check box and IP address will be able to set.

[When PROSet is not installed]

1. The [Local Area Connection Properties] dialog box appears.

   * The procedure in the case of the standard start menu

     1) Click Start menu, click [Control Panel], click [Network Connections], and click [Local Area Connection].

   * The procedure in the case of the classic start menu

     1) Click Start menu, click [Settings] and click [Network Connections].

        The [Network Connections] dialog box appears.

     2) Right-click [Local Area Connection] and click [Properties] from pop-up menu.

2. Click [Configure].

   The property dialog box for network adapter appears.

3. Click the [Advanced] and specify the [Link Speed & Duplex] value the same as the value specified for HUB.

4. Click [OK] on the property dialog box for network adapter.

[When PROSet is installed]

1. The [Intel(R) PROSet] dialog box appears.

   * The procedure in the case of the standard start menu

     Click Start menu, point to [Control Panel], [Administrative Tools], and click [Computer Management] and then double click the [(Network Adapter Name)] in the Network Adapter list.

   * The procedure in the case of the classic start menu

     1. Click Start menu, point to [Settings] and click [Control Panel].
     2. Click [administrative tools].
     3. Click [Computer Management] and double click the [(Network Adapter Name)] in the Network Adapter list.

2. Click the [Link] and specify the [Speed and Duplex] value the same as the value specified for HUB.
3. Click [Apply] and click [OK].

Also, add or delete any protocols and services if necessary.

You can operate the process on the property dialog box for local area network which can be appeared from [Network and Dial-up Connection].

> **NOTE:** It is recommend to add [Network Monitor] at [Adding Services]. [Network Monitor] can monitor the frame (or the packet) that the computer installing [Network Monitor] sends or receives. This tool is valuable when analyzing network trouble. For information on how to install the tool, see the "Setting for Solving Problems" described later in this chapter.

Re-install the Network Driver

The network driver will be installed automatically.

Optional Network Board Driver

If you want to utilize optional Network Board (N8104-119/111/120/121/122/125/126/123A), the network driver will be installed automatically. Therefore, the driver attached to the Network board should not be used.

If you want to utilize optional Network Board (N8104-86/111), install the driver stored in NEC EXPRESSBUILDER DVD.

In case of utilizing (N8104-111)

"\002\win\winnt\w2k3amd\dl3\pro100\winx64"

In case of utilizing (N8104-119/120/121/122/125/126)

"\002\win\winnt\w2k3amd\dl3\pro1000\winx64"

If the procedure of installation is not clear, refer to the installation procedure described in the section "Installation of the Optional Network Board Driver".

In case of utilizing (N8104-123A)

Please refer to the installation manual provided with the board.

Installation of the Optional Network Board Driver

1. Start Device Manager.
2. Click [Network adapters] and double-click [(Network Adapter Name)].

   [(Network Adapter Name) Properties] appears.

   NOTE: [(Intel (R) PRO/1000...)] is the name of On-Board adapter. All other names show the Optional Network Board.

3. Click [Driver] tab and click [Update Driver...]. [Hardware Update Wizard] appears.
4. Select the [Install from a list or specific location (Advanced)] radio button and click [Next].
5. Select the [Search for the best driver in these locations] radio button and check off the [Search removable media (floppy, CD-ROM...)] check box.
6. Check the [Include this location in the search] check box and when using [(N8104-111)], specify
   [\002\win\winnt\w2k3amd\dl3\pro100\winx64].

   Then click [Next].

   When using [(N8104-119/120/121/122/125/126)], specify
   [\002\win\winnt\w2k3amd\dl3\pro1000\winx64].

   Then click [Next].
7. Click [Finish].

Adapter Fault Tolerance (AFT)/Adaptive Load Balancing (ALB)

Adapter Fault Tolerance (AFT) is a feature that creates a group containing more than one adapter and automatically converts the process of the working adapter to the other adapter in the group when any trouble occurred on that adapter.

Adaptive Load Balancing (ALB) is a feature that creates a group containing more than one adapter and enhance the through put by operating packet transmission from the server by all the adapters.

This feature includes AFT feature.

IMPORTANT:

- AFT/ALB setup must be operated after installing the drivers and restarting the system.
- All the adapters specified as a group of Adapter Teaming must exist on the same LAN. If they are connected to the separate switches, they will not work normally.
- The adapters specified as a group of Adaptive Load Balancing (ALB) can be connected to only Switching Hub.
- When exchange the mother board or option network card, make sure to remove the adapter team before exchanges and recreate the adapter team after exchange complete.

If you want to utilize AFT/ALB feature, follow the procedure below to setup.

1. The [Intel (R) PROSet] dialog box appears.

* The procedure in the case of the standard start menu

  Click Start menu, point to [Control Panel], [administrative tools], and click [Computer Management] and then double click the [(Network Adapter Name)] in the Network Adapter list.

* The procedure in the case of the classic start menu

  1. Click Start menu, point to [Settings] and click [Control Panel].
  2. Click [administrative tools].
  3. Click [Computer Management] and double click the [(Network Adapter Name)] in the Network Adapter list.

2. Select [Teaming] tab and then check on [Team with other adapters] and click [New Team...].

The [New Team Wizard] dialog box appears and click [Next]

* Specify a name for the team if it necessary.

3. Select the adapters to include in team.
4. Select "Adapter Fault Tolerance" or "Adaptive Load Balancing" and click [Next].
5. Click [Finish].
6. If necessary to set the adapter priority setting, refer the following step.

   If not, go to step 7.

   1. Click [Settings] tab on [TEAM:xxx #yy Properties].
   2. Click [Modify Team].
   3. Point to the adapter [Intel(R)PRO/1000....] and click [Set Primary] or [Set Secondary].
   4. Click [OK].
   5. The setup will go back to [EAM:xxx #yy Properties] and the priority setting will display in list ().
   6. Click [OK]
7. The setup will go back to [Intel (R) PROSet for Wired Connections] dialog box, so click [OK].
8. Restart the system.

Graphics Accelerator Driver

If you utilize standard graphics accelerator drivers, update your system with NEC EXPRESSBUILDER DVD attached to your system.
Standard graphics accelerator drivers will be installed automatically.

Please follow the following procedure when you want to reinstall the driver individually.

1. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.

   If the autorun menu is displayed, close menu screen.
2. Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "setup.exe" in the following directory.

   \002\win\winnt\w2k3amd\video\setup.exe
4. Follow the message to continue the installation.

   If the dialog message "Digital Signature could not been found." appears, select [Yes] to continue.
5. Remove the NEC EXPRESSBUILDER DVD from the optical disk drive, restart the system.

Installing SCSI Controller Driver (N8103-75/107)

If you utilize SCSI controller driver (N8103-75/107), update your system with NEC EXPRESSBUILDER DVD attached to your system.

The SCSI controller driver will be installed automatically.

SCSI Controller Driver (N8103-95)

The SCSI controller driver will be installed automatically.

Installing SAS Controller Driver (N8103-104)

If you utilize SAS controller driver (N8103-104), update your system with NEC EXPRESSBUILDER DVD attached to your system.

The SAS controller driver will be installed automatically.

About Windows Activation

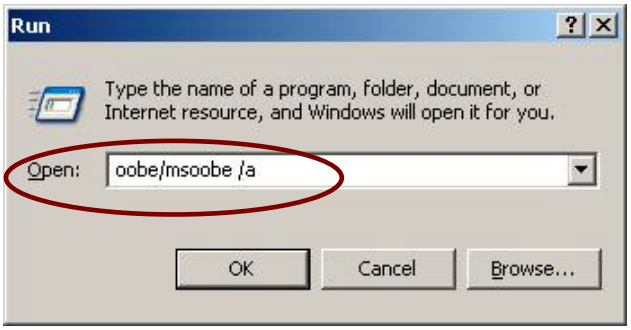
Windows Server 2003 x64 Editions must be activated before you can use Windows Server 2003 x64 Editions.

Windows activation process is as follows.

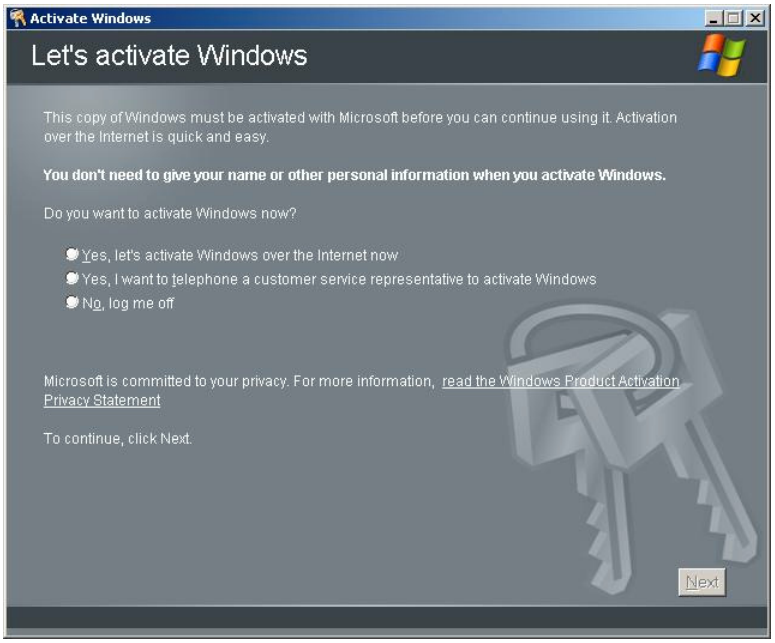
1. Click [Run] on [Start] menu.

   Type as follows in the [Open:] box, and click [OK].

   oobe/msoobe /a



2. When the screen as follows is displayed, click [Next].



The following screen is displayed.

3. Process "Windows activation" according to the following message.

SETTING FOR COLLECTING MEMORY DUMP (DEBUG INFORMATION)

Set for collecting memory dump using the procedure described in Chapter 5.

Appendix E

Installing Windows Server 2003

This section explains how to install the Windows Server 2003.

BEFORE INSTALLING WINDOWS SERVER 2003

Read the following notes or information before installing the Windows Server 2003.

Optional Board Supported by NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER DVD attached to your server supports the following optional boards;

> **NOTE:** If you want to install the other boards by using a driver floppy disk ("OEM-FD for Mass storage device"), except ones listed below, see "Installing with the OEM-FD for Mass storage device" and "Installing Optional Mass Storage Driver" of "Parameter File Creator" in Chapter 6.

- Controllers supporting installation of OS with Express Setup
  - N8103-116 RAID controller (128 MB, RAID0/1)
  - N8103-117 RAID controller (128 MB, RAID0/1/5/6)
  - LSI Embedded MegaRAID (embedded on the mother board)
- Other controllers
  - N8103-75 SCSI Controller*
  - N8103-95 SCSI Controller*
  - N8103-104 SAS Controller*
  - N8103-107 SCSI Controller*

  * Option.

Service Pack Which EXPRESSBUILDER Supports

The EXPRESSBUILDER DVD attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2003 R2
  - OS installation media (with Service Pack 2)
  - OS installation media (No Service Pack) + Service Pack 2
  - OS installation media(No Service Pack)
- Windows Server 2003
  - OS installation media (with Service Pack 1)
  - OS installation media (with Service Pack 1) + Service Pack 2

Application of Service Pack

You can install the Service Pack on the server. When the Service Pack is not attached to your system, prepare it by yourself.

When installing Windows Server 2003 R2, it is not necessary to apply Service Pack 1.

Updating System

If you modified the Windows system, execute "Update the System" in Windows Autorun Menu.

Re-installing to the Hard Disk which has been upgraded to Dynamic Disk

If you want to leave the existing partition when installing the system on the hard disk upgraded to Dynamic Disk, note the following issue:

- Do not select the partition that OS had been installed as the partition to install the OS newly.
- Select "Use the current File System" for the format of OS partition.

Mounting MO Device

Do not mount an MO device on your server during the Windows installation.

About Removable Media

Do not set removable media, such as DAT, into the device mounted on your server during the OS installation.

Floppy Disk Drive

The internal floppy disk drive is not included in your system at the standard configuration. Prepare the optional USB floppy disk drive if necessary.

About the Upgrade to Windows Server 2003 R2

The "in-place upgrade" from Windows Server 2003 to Windows Server 2003 R2 is not recommended because it may overwrite any files or registries, and cause unexpected impact to the system or the applications.

If you install Windows Server 2003 R2, backup user data referring "Windows Server 2003 Clean Installation", and reinstall Windows Server 2003 R2.

> **NOTE:** "in-place upgrade" is to perform overwrite upgrade from Windows Server 2003 which already installed to Windows Server 2003 R2.

About the System Partition Size

The system partition size can be calculated from the following formula.

Size necessary to install the system	+ Paging File Size + Dump File Size + Application Size
Size necessary to install the system	= 3500MB (Windows Server 2003 R2)
	= 3500MB (Windows Server 2003 with Service Pack 1)
	= 3500MB (Windows Server 2003 R2 with Service Pack 2)
	= 5300MB (Windows Server 2003 R2 + Service Pack 2)
	= 5300MB (Windows Server 2003 with Service Pack 1 + Service Pack 2)
Paging File Size (Recommended)	= Mounted Memory Size * 1.5
Dump file Size	= Mounted Memory Size + 12MB
Application Size	= Required Size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- The maximum paging file size which can be set on one partition is 4095MB. If the above paging file size exceeds 4095MB, specify 4095MB for the paging file size.
- The maximum dump file size for the system with more than 2GB memory mounted is '2048MB + 12MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

For example, if the mounted memory size is 512MB, the partition size will be calculated by the above formula as follows:

3500MB + (512MB * 1.5) + (512MB + 12MB) + Application Size
= 4792MB + Application Size

Dividing into the partition of the recommended size into multiple disks as written below will solve problem that it cannot be reserved in one disk.

1. Set the "Size required for installation + Paging file size".
2. See Chapter 5 and set that debugging information (equivalent to the dump file size) is to be written to a separate disk.

   (If the disk does not have enough free space to enable the dump file size to be written, then after installing the system using the "Size required for installation + Paging file size", install an additional new disk.)

INSTALLING WINDOWS SERVER 2003

Preparations for Installation

- NEC EXPRESSBUILDER DVD
- Microsoft Windows Server 2003 Standard Edition (CD-ROM)/ Microsoft Windows Server 2003 Enterprise Edition (CD-ROM), Microsoft Windows Server 2003 R2 Standard Edition (CD-ROM)/ Microsoft Windows Server 2003 R2 Enterprise Edition (CD-ROM)
- Windows Server 2003 Service Pack (CD-ROM)
- User's Guide
- Getting Started
- Windows Server 2003 OEM-Disk for EXPRESSBUILDER

Creating "Windows Server 2003 OEM-Disk for EXPRESSBUILDER"

Before installing, create Windows Server 2003 OEM-Disk for EXPRESSBUILDER.

> **NOTE:** If you have already "Windows Server 2003 OEM-Disk for EXPRESSBUILDER" for NEC Express5800 Server which you are going to install Windows Server 2003, you do not need to create it again.

You can create Windows Server 2003 OEM-Disk for EXPRESSBUILDER with the following two procedures.

- Create from the menu which appears when running NEC Express5800 Server with NEC EXPRESSBUILDER.

  If you have only NEC Express5800 Server to create Windows Server 2003 OEM-Disk for EXPRESSBUILDER, use this procedure.

  If Windows Server 2003 or Windows can be operated on NEC Express5800 Server, you can use the other procedure described later.

  Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Turn on your NEC Express5800 Server.
3. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
4. Press the RESET switch or press **Ctrl**, **Alt** and **Delete** to reboot the server. (You may also turn off and then on again to reboot the server.)

   The system will boot from the DVD-ROM and NEC EXPRESSBUILDER starts.
5. Select [Create the OEM-DISK for Windows] from [Tools Menu] step.
6. Select [Create an Windows Server 2003 OEM-Disk for EXPRESSBUILDER] at [Create OEM-Disk] and click [Perform].
7. Insert a floppy disk into the floppy disk drive according to the instruction on the screen.

   Windows Server 2003 OEM-Disk for EXPRESSBUILDER will be created.

   Write-protect and attach a label, then keep it safely.

■ Create from [Autorun Menu]

This menu requires Microsoft Windows XP, Vista or Windows Server 2003 (or later).

You can create Windows Server 2003 OEM-Disk for EXPRESSBUILDER from [Autorun Menu], if you have the computer on which the above operating systems operate.

Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Start the Operating System.
3. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.

   The Menu will appear.
4. Click [Create drive disk] and select [OEM-Disk for Windows Server 2003].

   NOTE: You can do the same operation with the menu appeared by the Right-click.
5. Insert the floppy disk into the floppy disk drive according to the message.

   Windows Server 2003 OEM-Disk for EXPRESSBUILDER will be created.

   Write-protect and attach a label, then keep it safely.

Windows Server 2003 Clean Installation

This section explains how to perform a clean installation of Windows Server 2003.

1. Turn on the system power.
2. Insert the Windows Server 2003 CD-ROM into the optical disk drive.
3. Press **Ctrl** + **Alt** + **Delete** to reset the system.

   After a bootable operating system has been installed on the hard disk drive, press **Enter** while the message "Press any key to boot from CD..." is displayed at the top of the screen.

   If no bootable operating system exists on the hard disk drive, this step is unnecessary.

   The Windows Server 2003 setup screen will appear.

   If the screen is not displayed, **Enter** was not pressed properly.

   Begin after turning on the system power again.
4. Press **F6** in a few seconds when the window is in either of the following states.
   - "Setup is inspecting your computer's hardware configuration ..." or "Press F6 if you need to install a third party SCSI or RAID driver..." is displayed.
   - A screen with a solid blue background is displayed.

   IMPORTANT: There is no visible indication on screen when **F6** has been pressed.
5. When the following message is displayed, press **S**.

   ```
   Setup could not determine the type of one or more mass storage devices
   installed in your system, or you have chosen to manually specify an adapter.
   Currently, Setup will load support for the following mass storage device(s).
   ```

   The following message is displayed.

   ```
   Please insert the disk labeled
   manufacturer-supplied hardware support disk
   into Drive A:
   *Press ENTER when ready.
   ```
6. Insert the Windows Server 2003 OEM-Disk for EXPRESSBUILDER into the floppy disk drive, and press **Enter**.

   A list of mass storage devices is displayed.

   If you utilize LSI Embedded MegaRAID, go on the step 8.
7. Select the [Intel(R) ESB2 SATA AHCI Controller (Server ESB2)] and press **Enter**.

8. Select the proper SCSI Adapter and press **Enter**.

- [LSI Logic MegaRAID SAS RAID Controller Driver (Server 2003 32-bit)] (When N8103-116 board is installed.)
- [LSI Logic MegaRAID SAS RAID Controller Driver (Server 2003 32-bit)] (When N8103-117 board is installed.)
- [LSI Embedded MegaRAID (Windows XP/2003)] (When LSI Embedded MegaRAID is used.)

Continue performing tasks according to the subsequent messages that appear.

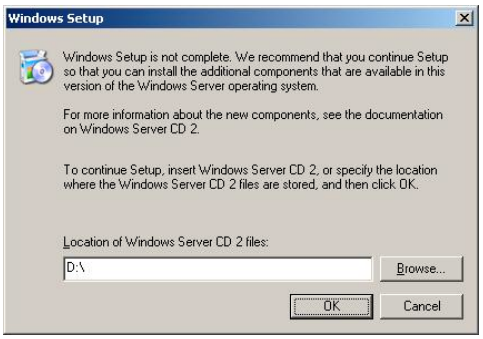
9. When the following message is shown, press **Enter** to start "Welcome to Setup".

IMPORTANT: If you install Windows Server 2003 on the hard disk larger than 2,097,152MB (2TB), you can specify only a value equal to or less than 2,097,152MB as partition size.

10. When the installation of Windows Server 2003 has finished, the system reboots automatically.

- Windows Server 2003 has installed: Go on the step 14
- Windows Server 2003 R2 has installed: Go on the step 11

11. When Windows Server 2003 R2 has been installed, the [Windows Setup] screen will be displayed after logged on to the system.



IMPORTANT:

- In this case, the [Windows Setup] screen may not be displayed. Be sure to install Microsoft Windows Server 2003 R2 DISC 2 according to the following procedures.
- You can install Microsoft Windows Server 2003 R2 DISC 2 after the application of "System update". Be sure to install Microsoft Windows Server 2003 R2 DISC 2. In this case, note that the [Windows Setup] screen is not displayed.

12. Insert Microsoft Windows Server 2003 R2 DISC 2 CD-ROM into the optical disk drive.

    Confirm the parameters and click [OK].

13. When the installation has completed, remove Microsoft Windows Server 2003 R2 DISC 2 CD-ROM from the optical disk drive, and restart the system.

14. When the installation has completed, be sure to execute the tasks described in "Driver Installation and Advanced Settings" and "Updating the System" of manual.

Procedure for License Authentication

Product Key used in the procedure for license authentication should be matched with the COA label in which the product key contained in Windows Server 2003 is written.

NOTES:

- Execute the activation within 30 days. System may be locked after 30 days is passed.
- COA label may be attached to your server.

Updating the System - Applying Service Pack -

Update the system in the situation below:

- CPU is expanded (expanded to single processor to multi-processor).
- Modified system configuration.
- Recovered the system using recovery process.

The system update brings the correction program provided by Microsoft to be applied to reinforce the system security. The system update is recommended.

Service Pack 2 need not be applied again when Windows Server 2003 CD-ROM which Service Pack 2 is included is used and it is installed.

Go on the section of "Updating the System".

Perform "Updating the System" and application of the "Hotfix (KB921411)".

IMPORTANT: In the situation below, make sure to apply "Updating the System" and "Hotfix (KB921411)".

- Modified system configuration
- Recovered the system using recovery process.

NOTE: If you use Windows Server 2003 CD-ROM which includes Service Pack 2, the application of "Hotfix (KB921411)" is not required.

Application Process of the Hotfix (KB921411)

Apply the "Hotfix (KB921411)" before execute "Updating the System".

1. Log on to the system by the account with administrator authority to the server (such as administrator).
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
3. Click Start menu and [Run], and then execute the following command.

   <When the English version of Windows Server 2003 R2 is used>

   \002\win\winnt\dotnet\qfe\enu\kb921411.exe

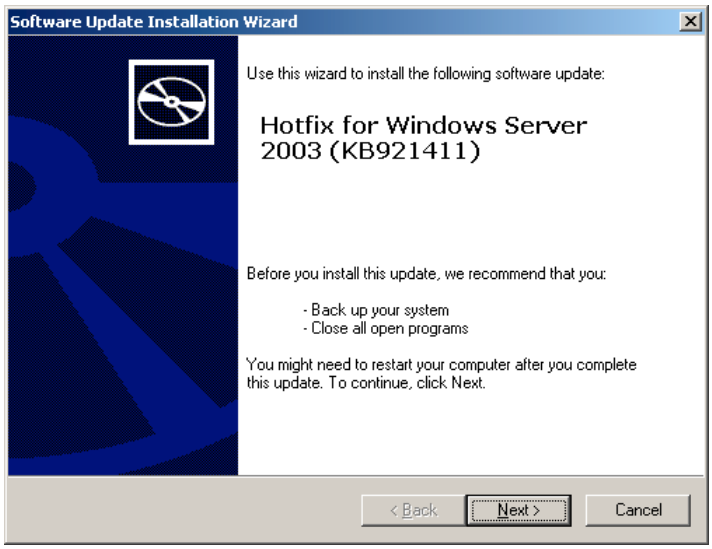
   <When the Simplified Chinese version of Windows Server 2003 R2 is used>

   \002\win\winnt\dotnet\qfe\chs\kb921411.exe

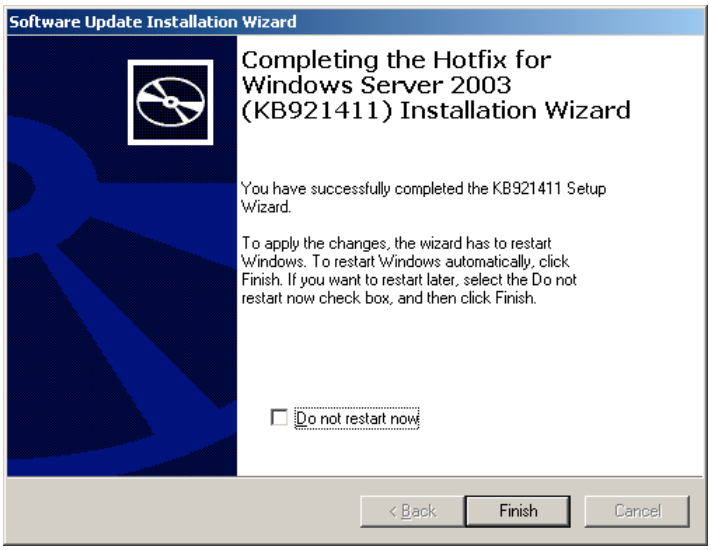
   <When the French version of Windows Server 2003 R2 is used>

   \002\win\winnt\dotnet\qfe\fra\kb921411.exe
4. When the following message is displayed, click [Next].

   After that, follow the message to continue the process.



5. When the following message is displayed, make sure to click [Finish] to restart the system.



With that, application process of the Hotfix (KB921411) is finished.

Application Process of "Updating the System"

"Updating the System" applies the drivers necessary for NEC Express5800 Series.

Follow this process after Hotfix for Windows Server 2003 (KB921411) had been applied.

> **NOTE:** If you install Windows CD-ROM that contains Service Pack 2 to your system, you do not have to apply Service pack 2 again.

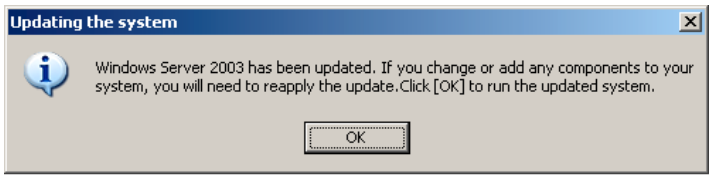
1. Log on to the system with the account that has administrative privilege (e.g. administrator).
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of server.

   The Autorun Menu will be displayed
3. Left-click on [Setup Windows], and then click [Update the system].

> **NOTE:** Right-clicking on the Windows Autorun Menu produces the same outcome.

Follow the message of the screen to proceed the application.

[OK] dialog box will be displayed.



IMPORTANT: During the "Updating the System", the following message may be shown, but there is no impact to the operation.
Do not click [cancel] since it may be taken away after a few seconds.

4. Click [OK] to restart the system.
5. When the reboot is started, Remove the NEC EXPRESSBUILDER DVD from the optical disk drive immediately.

Recovery Process

If "Updating the System" is executed before the application of the "Hotfix for Windows Server 2003 (KB921411)", "!" may be displayed on the USB root hub.

If "!" is displayed on the USB root hub, perform application of the "Hotfix for Windows Server 2003 (KB921411)" and the "Updating the System" according to the following process.

1. Start the Windows Explorer, and click [Tools] and [Folder Options].
2. Select [Files and Folders] - [Hidden files and folders] - [Show hidden files and folders] radio button from Advanced settings in the [View] tab.
3. Check off the following check box in the [Files and Folders] from Advanced settings in the [View] tab, and then click [OK].

   Hide extensions for know file type

   Hide protected operating system files [Recommended]

   When the message "You have chosen to display protected operating system files..." is displayed, click [Yes].
4. Make sure of the files.

   Open "<System drive:>\WINDOWS\system32\drivers" directory, and make sure usbhub.sys and usbport.sys are exists in the directory.

   If you can not found them, copy the files according to the following process.

   (1) Open "<System drive:>\WINDOWS\system32\dllcache" directory.

   (2) Copy usbhub.sys and usbport.sys from the directory noted above to "<Systemdrive:>\WINDOWS\system32\drivers".
5. Restart the system.
6. Refer to [Application process of the Hotfix (KB921411)] and apply the "Hotfix for Windows Server 2003 (KB921411)".
7. Refer to [Application process of "Updating the System"] and execute "Updating the System".
8. Restart the system.

   With that, process is finished.

DRIVER INSTALLATION AND ADVANCED SETTINGS

This section describes on how to install and setup various standard drivers mounted on the device.

For the information on installing and setting up the driver that is not described in this section, please refer to the document attached to the driver.

PROSet

PROSet is a utility that confirms the function of network contained in network driver.

Utilizing PROSet enables the following items:

- Confirm detailed information of the adapter.
- Diagnose loop back test, packet transmission test and so on.
- Setup of teaming.

Configuring several network adapters as one team provides the server a tolerant environment on any trouble and enhance throughput between the switches.

PROSet is necessary to utilize these features.

Follow the procedure below to install PROSet.

1. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.

   If the autorun menu is displayed, close menu screen.

2. The [Windows Explorer] dialog starts.

   * The procedure in the case of the standard start menu

     Click Start menu and click [Windows Explorer].

   * The procedure in the case of the classic start menu

     Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].

3. Run "dxsetup.exe" in the following directory.

   \002\win\winnt\dotnet\dl3\proset\win32

   The [Intel® PROSet - InstallShield Wizard] dialog starts.

4. Click [Next].

5. Choose "I accept the terms in the license agreement" and click [Next].

6. Choose "Complete" and click [Next].

7. Click [Install].

8. When [InstallShield Wizard Completed] window is displayed, click [Finish].

9. Remove the NEC EXPRESSBUILDER DVD from the optical disk drive, restart the system.

Network Driver

Specify the details of network driver.

One standard network driver that is mounted will be installed automatically, but the link speed and Duplex mode need to be specified manually.

[When PROSet is not installed]

1. The [Local Area Connection Properties] dialog box appears.

   * The procedure in the case of the standard start menu

     1. Click Start menu, Click [Control Panel], Click [Network Connections], and Click [Local Area Connection].

   * The procedure in the case of the classic start menu

     1. Click Start menu, Click [Settings] and Click [Network Connections].

        The [Network Connections] dialog box appears.

     2. Right-click [Local Area Connection] and click [Properties] from pop-up menu.

2. Click [Configure].

   The property dialog box for network adapter appears.

3. Click the [Advanced] and specify the [Link Speed & Duplex] value the same as the value specified for HUB.

4. Click [OK] on the property dialog box for network adapter.

[When PROSet is installed]

1. The [Intel(R) PROSet] dialog box appears.

   * The procedure in the case of the standard start menu

     Click Start menu, point to [Control Panel], [Administrative Tools], and click [Computer Management] and then double click the [(Network Adapter Name)] in the Network Adapter list.

   * The procedure in the case of the classic start menu

     1. Click Start menu, point to [Settings] and click [Control Panel].
     2. Click [administrative tools].
     3. Click [Computer Management] and double click the [(Network Adapter Name)] in the Network Adapter list.

2. Click the [Link] and specify the [Speed and Duplex] value the same as the value specified for HUB.

3. Click [Apply] and click [OK].

Also, add or delete any protocols and services if necessary.

You can operate the process on the property dialog box for local area network which can be appeared from [Network and Dial-up Connection].

> **NOTE:** We recommend you to add [Network Monitor] at [Adding Services]. [Network Monitor] can monitor the frame (or the packet) that the computer installing [Network Monitor] sends or receives. This tool is valuable when analyzing network trouble. For information on how to install the tool, see the "Setup for Trouble Process" later in this document.

Re-install the Network Driver

The network driver will be installed automatically.

See Chapter 5, "Optional Network Board Driver" for re-install the optional network board driver.

Adapter Fault Tolerance (AFT)/Adaptive Load Balancing (ALB)

See Chapter 5, "Adapter Fault Tolerance (AFT)/Adaptive Load Balancing (ALB)" for re-setting the Adapter Fault Tolerance (AFT)/Adaptive Load Balancing (ALB).

Graphics Accelerator Driver

If you utilize standard graphics accelerator drivers, update your system with NEC EXPRESSBUILDER DVD attached to your system.
Standard graphics accelerator drivers will be installed automatically.

Please follow the following procedure when you want to reinstall the driver individually.

1. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.

   If the autorun menu is displayed, close menu screen.

2. Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].

3. Run "setup.exe" in the following directory.

   \002\win\winnt\dotnet\video\setup.exe

4. Follow the message to continue the installation.

   If the dialog message "Digital Signature could not been found." appears, select [Yes] to continue.

5. Remove the NEC EXPRESSBUILDER DVD from the optical disk drive, restart the system.

SCSI Controller Driver (N8103-75/95/107)

If you utilize SCSI controller driver (N8103-75/95/107), update your system with NEC EXPRESSBUILDER DVD attached to your system.

The SCSI controller driver will be installed automatically.

Installing SAS Controller Driver (N8103-104)

If you utilize SAS controller driver (N8103-104), update your system with NEC EXPRESSBUILDER DVD attached to your system.

The SAS controller driver will be installed automatically.

About Windows Activation

Windows Server 2003 must be activated before you can use Windows Server 2003.

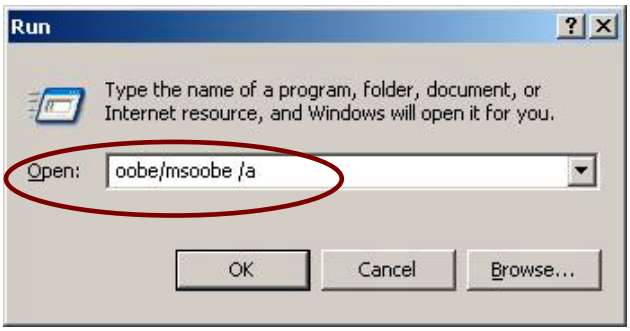
Windows activation process is as follows.

> **NOTE:** When you use Windows Server 2003 R2, activation process is not needed.

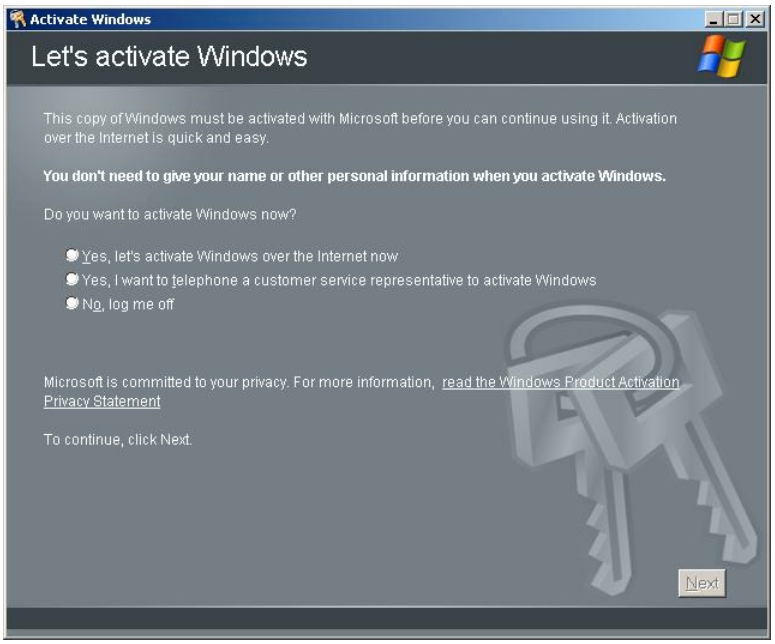
1. Click [Run] on [Start] menu.

   Type as follows in the [Open:] box, and click [OK].

   oobe/msoobe /a



2. When the screen as follows is displayed, click [Next].



The following screen is displayed.

3. Process "Windows activation" according to the following message.

Available Switch Options for Windows Server 2003 Boot.ini File

Many different switches will be available if you edit Boot.ini file.

For the available switch options, refer to the following information:

- Microsoft Knowledge Base - Article ID: 833721

  "Available switch options for the Windows XP and the Windows Server 2003 Boot.ini files"

If your system has a memory capacity in excess of 4GB in its installing, adding /PAE switch in Boot.ini file will enable the system to be installed with over 4GB of memory.

However, the Microsoft operating system products which support /PAE switch option are limited.

Refer to the following article in Microsoft Knowledge Base to check the supported products.

- Microsoft Knowledge Base - Article ID: 291988

  "A description of the 4GB RAM tuning feature and the Physical Address Extension switch"

Below is the example on how to add /PAE switch to Boot.ini file.

1. Click [Start], point to [Settings], and then click [Control Panel].
2. In [Control Panel], double-click [System].
3. Click the [Advanced] tab, and then click [Settings] under [Setup and Recovery].
4. Under [System Setup], click [Edit] to open [Boot.ini].
5. Add "/PAE" to [Operating Systems] section in [Boot.ini] file, and then save it.

   <Example of Boot.ini file>

   ```
   [boot loader]
   timeout=30
   default=multi(0)disk(0)rdisk(0)partition(2)\WINDOWS
   [operating systems]
   multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003" /fastdetect
   multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003, PAE" /fastdetect
   /PAE
   C:\CMDCONS\BOOTSECT.DAT="Microsoft Windows Recovery Console" /cmdcons
   ```

   This is the end of editing Boot.ini file.

NOTE: If you choose one of the items in the "Default operating system" drop-down list box in [Setup and Recovery] group box, you can make your system start automatically from the switch you specified.

SETTING FOR COLLECTING MEMORY DUMP (DEBUG INFORMATION)

Set for collecting memory dump using the procedure described in Chapter 5.

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Appendix F

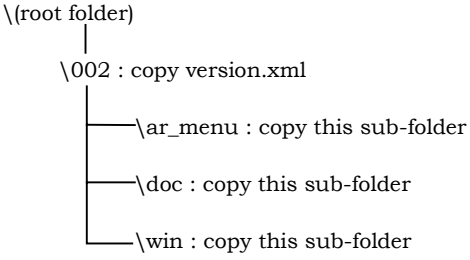
Using a Client Computer Which Has a CD Drive

The NEC EXPRESSBUILDER disk is DVD so that a client computer which you want to use for managing the server needs a DVD drive.

If you want to install the management software of EXPRESSBUILDER to the client without the DVD drive, make a CD-R from EXPRESSBUILDER DVD according to the following steps.

> **NOTE:** This procedure can copy only one CD at the purpose of installing the management software to the client.

1. Insert the EXPRESSBUILDER DVD to the computer which has a DVD drive.
2. If Autorun menu appears, close the menu.
3. Copy the below files of EXPRESSBUILDER to a hard disk by using Explorer.



4. Delete the ar_menu\autorun_menu.xml on the hard disk, and rename the ar_menu\autorun_en.xml on the hard disk to the autorun_menu.xml.
5. Copy the above files/folders to a CD-R.

   Match the root folder when you burn a CD-R.
6. Delete the files/folders that you copied at step 3.
7. Insert the CD-R to a client computer which you want to install the management software.
8. Kick the below file of the CD-R by using Explorer.

   \002\ar_menu\autorun_menu.exe (for Windows 32 bit edition)

   autorun_menu_x64.exe (for Windows 64 bit edition)

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Appendix G

Product Configuration Record Table

Use this table for information about setup and system environment change.

Hardware

Main Unit						
	Model name		Serial No.		Date Installed	
CPU						
#1	Clock		Serial No.		Date Installed	
#2	Clock		Serial No.		Date Installed	
Memory						
#11, #21	Size		Serial No.		Date Installed	
#31, #41	Size		Serial No.		Date Installed	
#12, #22	Size		Serial No.		Date Installed	
#32, #42	Size		Serial No.		Date Installed	
Monitor						
	Type		Model name		Serial No.	
					Date Installed	
Hard Disk Drive						
#1	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
#2	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
#3	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
#4	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
#5	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
#6	Type			Serial No.		
	Capacity			Date Installed		
	Type number					

Backup Device						
Slot 1	Size		Capacity		Serial No.	
	Model name		Type number		Date Installed	
PCI Slot #1B						
	Model name				Serial No.	
					Date Installed	
PCI Slot #1C						
	Model name				Serial No.	
					Date Installed	
Printer						
	Model name				Serial No.	
	Manufacturer				Date Installed	
Additional Cabinet for Disk						
	Model name				Serial No.	
					Date Installed	
External Peripheral Device 1						
	Model name				Serial No.	
	Manufacturer				Date Installed	
External Peripheral Device 2						
	Model name				Serial No.	
	Manufacturer				Date Installed	
External Peripheral Device 3						
	Model name				Serial No.	
	Manufacturer				Date Installed	
External Peripheral Device 4						
	Model name				Serial No.	
	Manufacturer				Date Installed	

Software

Firmware version				
OS Application of RUR media	 ☐ Apply	Name: Name:		Version: Version:
File system	☐ FAT ☐ Others (	☐ HPFS	☐ NTFS)	
Bundled software installed				
Licensed software installed				
Application running when a failure occurred				

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